



SWINS

Sustainable Well-being
through INvestment
in Social Services

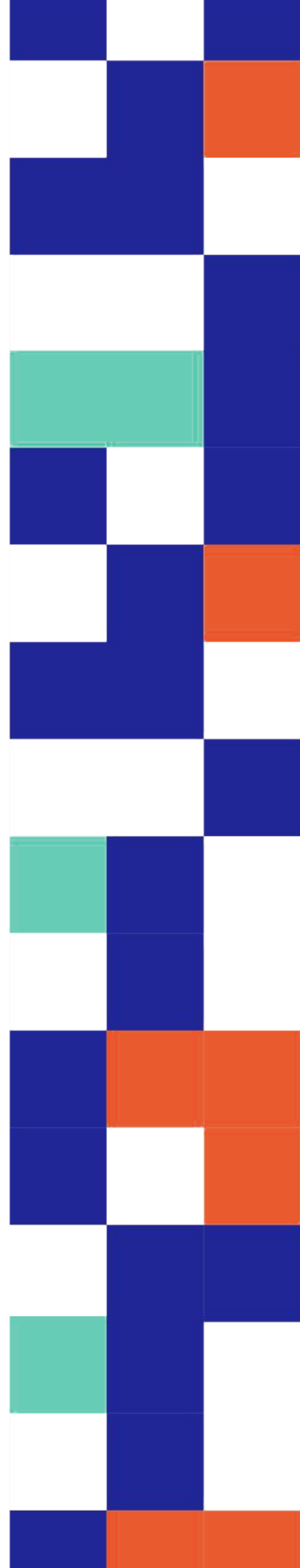
D4.2 The value of social services

January 2026



Funded by
the European Union

Funded by European Union's Horizon Europe
Programme under Grant Agreement No. 101177566





Authors

Toon Van Havere - Researcher of the SWINS project, University of Antwerp

Gerlinde Verbist - Researcher of the SWINS project, University of Antwerp

Peer Reviewers

Floore Bursens, University of Antwerp; András Gabos, TARKI Social Research Institute; Sarah Marchal, University of Antwerp; Arianna Vivoli, ARCO of PIN Foundation.

Cite as

Van Havere, T., Verbist, G. (2026), "The value of social services" SWINS Working Paper n°4.2. SWINS – Sustainable Well-being through Investment in Social Services. ARCO, research centre at PIN Foundation.

Acknowledgements

The authors would like to thank all SWINS partners for their inputs provided in several SWINS meetings and communications.

Disclaimer

This Working Paper is part of Task 4.2, "Ways to integrate longitudinal household data into EUROMOD". This task explores further possibilities of using longitudinal EU-SILC in combination with EUROMOD for the study of economic and social returns of investments in social services. The task will serve as an input for Tasks 6.1 and 6.4.

Funded by the European Union under Grant Agreement No.101177566. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Agency. Neither the European Union nor the granting authority can be held responsible for them.

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1. Introduction

Welfare states provide social benefits both in cash and in kind. In Europe, cash benefits include income transfers, such as retirement pensions, family benefits and unemployment allowances, while in-kind benefits are usually derived from the use of publicly provided services, such as healthcare, education, early childhood care and care for the elderly. These social services and policies have become key components of European welfare states, especially with the rising importance of the social investment paradigm in recent decades. High levels of spending on these services are often seen as an indicator of commitment to social investment. In most European welfare states services constitute an important part of public social spending, as shown in Figure 1. In 2019, almost 40% of social spending in European countries was allocated to in-kind spending, with considerable variation across countries, ranging from 25 percent in Greece to up to 50 percent in Norway.

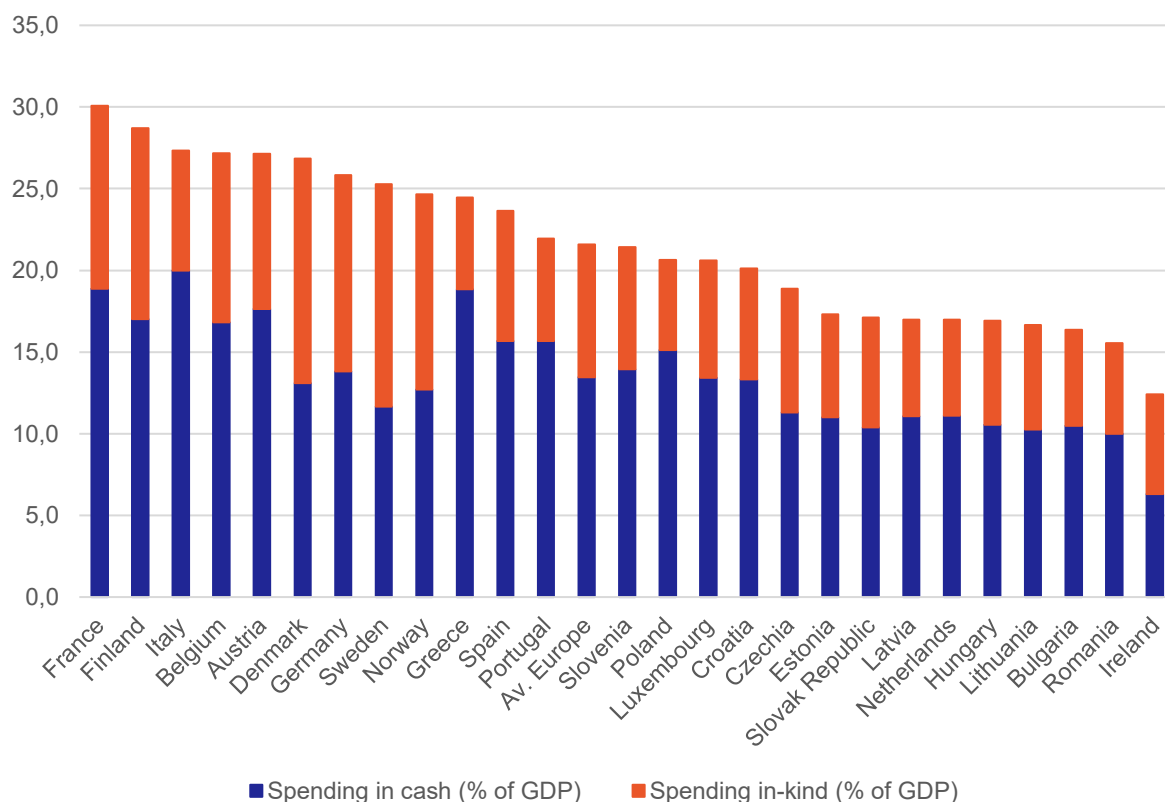
Despite this importance, the value of public services is often ignored in distributive analyses, although the arguments to include them carry substantial weight. As argued in OECD (2008) households pay taxes to finance these services, and while taxes are deducted from gross incomes to arrive at net incomes (the core variable in most distributive analyses), the corresponding provided public services are not accounted for. It is, however, clear that these services affect households' consumption possibilities. Given the budgetary importance of these services, it can be expected that these services have a significant impact on households' well-being, and thus it is important to estimate the value of these services (Aaberge et al., 2010, Marical et al., 2008; Aaberge et al., 2024; Verbist, 2017). Ignoring the value of publicly provided services results in an incomplete picture of the economic well-being of household, leading to inaccurate comparisons between countries and within countries over time. Given the country variation shown in Figure 1, an analysis using a cash income only approach is biased towards countries with more generous cash benefits. As a result a country that predominantly focuses on social support through social services or that reallocates social spending towards in-kind benefits might appear less redistributive than a country that focuses on in-cash support.

Also from the sustainable well-being perspective, which is central in the SWINS-framework, it is necessary to be able to gauge the value of publicly provided social services. Services undoubtedly “are enablers of individual and collective capabilities, providing the foundational conditions for effective labour market participation, continuous skills development, innovation, and social cohesion” (Ciani & Fattacciu; 2025, p.8). In addition, “capability-oriented frameworks to evaluate social services provision and design (...) showing how services contribute to capabilities” (Ciani & Fattacciu; 2025, p.13). As one of the key goals of SWINS is “to find out which social services are worth the money and can improve people's lives over time” (Ciani & Fattacciu; 2025, p.9), it is important to be able to estimate the value of these services.

Over recent years, several attempts have been made to include the value of social services in the assessment of economic wellbeing, mainly focusing on healthcare, social housing, education and elderly care (Aaberge et al., 2010; Verbist et al., 2012; Marical et al., 2008). Most studies find that social services have an important redistributive role, reducing inequality and poverty, although their redistributive impact remains lower than that of cash transfers (Aaberge et al., 2010; Verbist et al., 2012; Marical et al., 2008; Cruces et al., 2025).



Figure 1: Public social spending on in-kind and cash benefits as a percentage of GDP in European countries, 2019



Note: Countries are ranked in descending order of public social expenditure.

(a) In-cash benefits include pensions (e.g. old-age, early retirement, survivor and disability), incapacity-related benefits (e.g. disability/health-related benefits and paid sick leave), family benefits (e.g. allowances, maternity/parental leave), unemployment benefits, income maintenance and other cash benefits

(b) In-kind benefits include care services (residential/home care, rehabilitative services), funeral expenses, rehabilitative services, family services (early childhood, education and care, home care services), active labour market programmes (training, PES, direct job creation, etc.), housing assistance/social housing, healthcare services and other in-kind benefits

Source: OECD (2025), *Social expenditure aggregates* (dataset),

<https://www.oecd.org/en/data/datasets/social-expenditure-database-socx.html> (accessed on 16 October 2025).

These studies also highlight the different conceptual and methodological challenges that arise if one wants to incorporate the value of government services in household income (see e.g. Aaberge *et al.*, 2010; Garfinkel *et al.*, 2006; Marical *et al.*, 2008). These challenges refer to:

1. the valuation of publicly provided services;
2. their allocation among individuals and households;
3. the incorporation of corresponding needs of households.

We discuss these different challenges in more detail in section 2. We then explain our approach and how it goes beyond the current standard cost of production practice. Specifically, we develop a more refined methodology to estimate the value of public services and compare its outcomes with those obtained using the

standard approach. Next, we provide an empirical application of our approach, using ECEC (section 4) and healthcare services (section 5) as an example. Section 6 discusses the main findings and concludes.

2. The challenges of estimating the value of publicly-provided social services for households

In line with other studies (e.g. Aaberge et al., 2010 and 2024; Garfinkel et al., 2006; Verbist & Förster, 2019), the focus here is on public *social* expenditures, which are social spending flows controlled by General Government (i.e. different levels of government and social security funds), thus excluding pure public goods, like national defence and justice. Hence, it involves only those expenditures that can be attributed to an individual beneficiary and that are excludable. More specifically, social services and policies refer both to in-kind interventions and to enabling social policies, which are not administered through direct cash transfers (Ciani & Fattacciu, 2025). We now discuss the different challenges each in turn, starting with the allocation issue (section 2.1), next the valuation issue (section 2.2) and finally the issue of how to account for differences in needs (section 2.3). In each case, we discuss the state-of-the-art of the literature, and how our own approach aims to go beyond the current state.

2.1. The allocation of services to individuals/households

The first challenge relates to how to allocate the value of social services across the population (Marical et al., 2008). Publicly-provided services are usually tailored to address specific needs, such as education and healthcare, which can vary considerably across the population. For instance, children primarily require educational services, whereas the elderly have greater need for healthcare services. In the literature, there are two dominant approaches on how to allocate these in-kind benefits across the population: the actual consumption approach and the insurance value approach (Verbist et al., 2012; Marical et al., 2008; Cruces et al., 2025). Recently, a hybrid approach has been proposed by Cruces et al. (2025).

The **actual consumption approach** allocates the value of services to those individuals who use the service. For most services, the actual consumption approach will be most appropriate, if beneficiaries can be identified. This identification can, however, be constrained by the quality and availability of data. In some cases, an **insurance-value approach** may be applicable, or even preferable. With this approach the 'insurance value' of coverage is imputed to each person based on specific characteristics. Table 1 summarises which of the two approaches is most commonly adopted in the literature for different service categories.



Table 1: Summary of allocation methods for different publicly provided social services

Public social service	Allocation method	Beneficiaries
Education	AC	Pupils and students
Healthcare	AC / IV	People using healthcare / All individuals covered by public health insurance
Social housing	AC	Residents of social housing units
Early childhood education and care	AC	Young children in public childcare and pre-primary education
Long-term elderly care	IV	All elderly people covered by the system
Incapacity-related	AC	Individuals that suffer from incapacity and use related publicly provided services
Active labour market programmes (ALM)	AC	Individuals participating in ALM programmes

Notes: AC = Actual consumption; IV = insurance value.

Source: Based on Verbist & Förster (2017)

The case of healthcare is an interesting one and merits further discussion, as both approaches have been used in the literature. Studies that use the actual consumption approach base their analyses on detailed data on the effective use of healthcare services by individuals (e.g. Evandrou *et al.* (1993) for the UK); they conclude that public healthcare expenditures lower income inequality. This approach is, however, only feasible if information is available on the actual use of healthcare services, which is often lacking in surveys on income and living conditions. In addition, a fundamental critique often raised against the actual use approach is that it ignores the greater needs that are associated with being ill, in the absence of an equivalence scale that adjusts for health status (see e.g. Aaberge *et al.*, 2010 and 2024). The actual consumption approach implies that sick people are *ceteris paribus* better off than healthy people because they receive more healthcare services. Moreover, research indicates that poorer people tend to have worse health conditions, and consequently greater needs for healthcare (see e.g. Hernández-Quevedo *et al.*, 2006; Costa-Font & Hernández-Quevedo, 2012).

As an alternative, the insurance-value approach is the most frequently used analytical method for healthcare and imputes the 'insurance value' of coverage to each person based on specific characteristics (e.g. age, sex, socio-economic position, etc.). The insurance value is the amount that an insured person would have to pay in each category (e.g. age group) so that the third-party provider (government, employer, other insurer) would have just enough revenue to cover all claims (Smeeding, 1982). The basic notion here is that what the government provides is equivalent to funding an insurance policy where the value of the premium is the same for everybody sharing the same characteristics (Marical *et al.*, 2006). Hence, the total sum of individual premiums should equal the total public expenditure on that specific service (Marical *et al.*, 2008; Verbist *et al.*, 2012; Cruces *et al.*, 2025). Most studies using the insurance-value approach impute public healthcare expenditures on the basis of people's age; they report a significant decrease in inequality. Compared to the actual use approach, the insurance value approach is less data-intensive. However, it does lack the individual

granularity of the actual use approach, as the premium is generally based on a limited set of individual characteristics.

The two alternative approaches can lead to different results. OECD (2008) applies both the insurance-value and the actual consumption approach for health expenditures in eight European countries. On average, the distributive effect of healthcare expenditures turned out to be considerably lower using the actual consumption approach than when measured using the insurance-value approach. This is due to the fact that the insurance-value approach assigns a uniform transfer to all beneficiaries (differentiated only according to age and sex), which leads to a decrease in inequality, and that the actual consumption approach may lead to considerable reranking of income units because of substantial amounts going to a relatively small group of individuals.

However, while the insurance-value option may be considered preferable for healthcare, it should also take account of individual differences in healthcare needs, since the specific characteristics used to impute the insurance value also relate to differences in needs (Smeeding *et al.* (2008)). Hence, the insurance-value approach needs to consider the use of an equivalence scale that incorporates differences in healthcare needs. From a theoretical point of view, this implies that different equivalence scales should be used in the distribution of disposable cash income, on the one hand, and of disposable income plus the value of healthcare services, on the other. The logic behind this distinction is that individuals belonging to particular groups probably have different relative needs for public healthcare services and for other commodities paid out of cash income. The issue of equivalence scales is further discussed in section 2.3.

An interesting recent development is the **hybrid approach** proposed by Cruces *et al.* (2025) in which they combine the above-mentioned approaches to compute the value of healthcare services. In short, they separate the total spending on healthcare services in two categories: (1) public spending on general practitioners (GP) or specialist care and (2) spending on other healthcare services. The latter is distributed across the population using an insurance value approach. The total spending on GPs and specialist care, retrieved from the national accounts, is divided by the number of visits to obtain the average value per visit. Using the 2022 EU-SILC healthcare module, the average value per visit is multiplied by the number of visits by an individual, resembling the actual use approach.

2.2. The valuation of services

In this section, we describe the approach that is standardly used in the literature to value services, notably the cost of production approach (Section 2.2.1). We then address the fact that, in practice, this often entails ignoring the private contribution households pay for this service, and discuss how this can be addressed (section 2.2.2).

2.2.1. The cost of production approach

As already identified by Smeeding *et al.* (1993), the valuation of social services is another important methodological challenge. In principle, the value of goods and services is determined by the willingness to pay of individuals for them on the private market. However, most publicly-provided services are characterized by the (near) absence of a private market (Marical *et al.*, 2008). As a result, the value of a social service cannot be derived by the willingness to pay of individuals (*market value approach*)¹. As a result, most studies that include non-market income value social services using the national accounts, assuming that the aggregated

¹ A notable exception is social housing, where the in-kind benefit of social housing has been estimated on the basis of private market rents (see e.g. Verbist and Grabka, 2017).



value of social services is equal to the aggregated cost of producing these services (Smeeding et al., 1993; Marical et al., 2008; Verbist et al., 2012). In this **cost of production approach**, each euro that a government spends on a particular service is assumed to create an equivalent value to the recipient. Although dominant, this valuation method may not adequately reflect the actual value beneficiaries retrieve from a social service (Verbist et al., 2012; Aaberge & Langorge, 2006).

First, by relying on the aggregated production costs as reported in the national accounts, this method overlooks regional variations in production costs, and, hence regional differences in the value of the social service (Aaberge & Langorge, 2006). In a case study in Norway, Aaberge and Langorge (2006) find evidence of economies of scale, where smaller municipalities face higher production costs for the provision of social services. This would imply that the value of services is higher in smaller regions and lower in larger, more densely populated regions, a pattern that would not be captured if the aggregated value is used across the population.

This, however, leans into the second issue regarding the efficiency and quality of social services (Verbist et al., 2012; Marical et al., 2008; Aaberge et al., 2024). The quality of government-provided services differs strongly between, and even within countries. For instance, the OECD (2025) finds that West-European healthcare systems are generally perceived as more performant than South-European healthcare systems. This raises the question of whether these quality discrepancies should be reflected in the valuation of social services.

In general, neither issue is accounted for in the cost of production method. However, the question arises as to whether two services of the same quality, but with different production costs due to regional or national differences in efficiency, should be valued differently.

Finally, it is also important to consider the net value of the service, i.e. to take account of the contributions households pay themselves for these services, which is the topic of the next section.

2.2.2. Considering private contributions

The role of private contributions is often ignored when estimating the value of social services (Cruces et al., 2025; Aaberge et al., 2010). Although some social services are completely free-of-charge for households in some countries (such as primary and secondary education), households often have to contribute (partially) to access certain social services. When considering the role of social services in sustainable well-being, it is important to acknowledge that these are often not fully subsidized, but that part of the cost is also borne by private contributions, or out-of-pocket payments (OOP). These are direct payments made by an individual for goods and services that are not reimbursed by insurance or another third party. Depending on the type of service, this private contribution can take different forms. For healthcare, OOP refer to healthcare copayments, deductibles, and coinsurance. For education, OOP refer to the direct costs for a student or pupil (or their families) that are not covered by study allowances, subsidies, etc. and include expenses like tuition fees, school material, etc. For early childhood education and care it relates to the parental contributions paid for childcare or pre-primary education. These out-of-pocket payments affect the cash disposable income position of families, creating a potential financial barrier and thus deterring poorer people from using the service.

We distinguish two ways in which private contributions can be integrated in distributive analyses of the value of social services: (1) deducting out-of-pocket payments from disposable income (instead of adding the value of the service to disposable income); (2) correcting the value of the service for private contributions. We briefly explain both approaches and assess whether they yield different redistributive outcomes.

Deducting out-of-pocket payments from disposable income

The approach of deducting private contribution is inspired by the strands of literature that analyse living standards based on an income concept that incorporates costs that households cannot avoid, such as housing costs or healthcare costs. This implies that the economic well-being of individuals with similar cash disposable income can vary strongly due to, for instance, housing tenure. In several countries - such as the United Kingdom and Australia – poverty measures use cash disposable income after deducting housing costs (Harding & Szukalska, 2000; Heylen & Haffner, 2012). This is done since housing costs are generally a large, fixed expenditure that vary significantly between (social) renters and homeowners (Harding & Szukalska, 2000; Heylen & Haffner, 2012). Studies in Australia, the United Kingdom, Belgium and the Netherlands point out that poverty and inequality after the deduction of net housing costs is significantly higher than before the inclusion of housing costs (Harding & Szukalska, 2000; Heylen & Haffner, 2012). Also for public healthcare expenditures, a similar approach has been applied. Rather than adding public healthcare expenditures, Gardiner et al. (1995) have proposed to deduct out-of-pocket costs for healthcare incurred by households from their disposable income. This is important for cross-country comparisons, given differences in organization of healthcare services. It may, however, also matter for within-country analysis, as these payments may differ according to income or other socio-economic characteristics.

A similar logic can also be applied to ECEC, by deducting parental contributions for childcare services from household disposable income.

Correcting the value of public services for private contributions

The second approach entails an improvement of the valuation of social services described earlier. The in-kind benefit received is adjusted for the differences in private contributions across households. One first calculates the total cost of the service, i.e. including both public and private contributions. Then, the individual OOP are subtracted from the value individuals derive, thus arriving at a net measure of the value of public services. By subtracting, for instance, the out-of-pocket cost of childcare services from the average full-time equivalent cost for a childcare slot, it is possible to have a more fine-grained estimate of the value of the public service. As private contributions are often income-dependent, the social gradient may differ between the so-called gross and net value of the public services (see further in section 3.3).

2.3. Considering differences in needs

In distributional analyses, it is conventional to account for economies of scale by adjusting household income using an equivalence scale, reflecting that household needs increase with each additional member, albeit in a non-proportional manner. However, when non-cash income components—such as in-kind benefits—are incorporated, a “consistency problem” may arise, as highlighted by Radner (1997). He argued that certain forms of non-cash income introduce needs that conventional equivalence scales fail to capture, potentially biasing assessments of economic well-being. Where children, for example, primarily require educational services, the elderly require more healthcare. As discussed in previous paragraph, these differences should be accounted for in the distribution of the aggregated value of particular services.

This issue is especially pertinent in poverty measurement, because including non-cash income may significantly alter the relative income position of low-income households. For example, consider two single-person households, each with EUR 1,000 in cash income. Individual A is ill and receives public healthcare valued at EUR 150, whereas Individual B is healthy and incurs no healthcare costs. As a result, individual A’s needs could be seen as 15% higher due to healthcare needs, implying an equivalence scale of 1.15 for A versus 1.0 for B. The inclusion of public in-kind services without adjusting equivalence scales accordingly may



overstate the welfare of recipients (e.g., the elderly with Medicare in the United States). Indeed, empirical work demonstrates that accounting for health and education in-kind transfers—and adjusting needs accordingly—reduces measured inequality and poverty more than models using standard equivalence scales (Paulus et al., 2010). Two alternative solutions to the problem of appropriate equivalence scales for in-kind benefits have been proposed in the literature (Aaberge *et al.*, 2010, 2017, 2024; Paulus *et al.*, 2010)².

Paulus et al. (2010) propose to use actual expenditures on public services as an indicator for the associated needs. They stipulate that the equivalence scale used to measure inequality of disposable cash income is conditional on the existence of free public services (such as education and healthcare). Including the value of these services in the income concept requires an adaptation of the equivalence scale. The fixed cost approach they propose assumes that “the needs of the recipients of these services are equal to a specific sum of money. For example, we could assume that the per capita amounts spent by the state for age-specific population groups on public education and public healthcare depict accurately the corresponding needs of these groups. Then the recalculation of equivalence scale is straightforward.” (Paulus et al. 2010, p.259.). In essence, application of this methodology is a sensitivity test for differences in national spending across countries, and thus gives an indication of cross-country differences with respect to the underlying needs associated with public services. The basic assumption is that the needs of the recipients are reflected in per capita spending amounts for specific target groups.

Aaberge et al. (2010, 2017, 2024) construct a joint equivalence scale for extended income based on a theoretical framework. First, they derive and apply this joint equivalence scale, defined as the weighted average of a non-cash and cash equivalence scale, on the basis of detailed Norwegian data, adjusting the model in Aaberge et al. (2017, 2024) to conduct cross-country comparative analyses in 24 EU countries. The need for a separate equivalence arises because non-cash income, unlike cash income, does not exhibit economies of scale. In this way, the authors provide a response to the critique formulated by Radner (1997).

Aaberge et al. (2010) develop a stepwise approach to derive this joint scale. First, they establish an equivalence scale for public services that captures group-specific spending relative to a reference group, where groups are perceived as populations with homogeneous needs for public services. To this end, the authors estimate a Linear Expenditure System using detailed data on Norwegian local government spending, allowing them to explain differences in spending behaviour between municipalities and determine the minimally required expenditure for each service and target group. The model takes into account (a) heterogeneity in expenditure needs, and (b) local preferences for allocation of income across services. The established minimum expenditure levels indicate the budget a social planner must allocate per individual in a given target group to achieve a specified level of social welfare. These figures serve as the foundation for calculating individual equivalence scales for public services. The equivalence scale reflects the sum of public service expenditures assigned to an individual relative to a reference amount. It is assumed that discretionary income within each sector is distributed among target groups in the same proportions as these minimum expenditures. This approach ensures fairness and consistency in resource allocation while respecting local priorities. The same logic underlies the needs-adjusted equivalence scale that is used for the empirical application on EU countries (Aaberge et al. 2024).

² Although Garfinkel et al. (2006) acknowledge the potential of differentiating the equivalence scale between cash and in-kind income, they still prefer a common equivalence scale for cash and in-kind income. They argue that in-kind benefits generally do not exhibit economies of scale. In this case, a division by the household size would be more appropriate than a division by an equivalence scale that accounts for these economies of scale. Nevertheless, simultaneously, these services are not equally shared by household members, in which case an individual appropriation might be better. As a result, they deem the common equivalence scales as a nice middle ground.

3. Methodology and data

Before moving to the empirical outcomes that show more refined estimates of the value of public services, we first explain the selection of countries (section 3.1), next the data used (section 3.2), and finally the practical implementation of the approaches outlined in the previous section (section 3.3).

3.1. Country selection

The estimation of the value of ECEC and healthcare services is carried out for a selection of thirteen European countries. These countries are Belgium, Germany, Spain, Finland, France, Croatia, Lithuania, Italy, the Netherlands, Poland, Portugal, Sweden, and Ireland. The choice is driven by the aim to represent different types of welfare states and regions in the European Union.

The countries in this selection have a markedly different approach in the organisation of ECEC services: in the Netherlands and Ireland, the organisation of ECEC services is marketised, and households are directly compensated through a cash benefit. In contrast, in other countries, centre-based childcare places are directly subsidised by the government, and parents provide a parental contribution. In countries such as Belgium, Finland, and France parental contributions are income-dependent, with in general lower rates for lower incomes; in Poland and Germany parental contributions are more uniform across households. Lastly, the use of ECEC services, particularly for children younger than three years, varies substantially across countries, as well as within countries across the income distribution, as demonstrated by Pavolini and Van Lancker (2018) (cfr. *infra*).

There is also substantial variation across the countries covered in terms of the organisation of healthcare systems (see, e.g. OECD, 2025). According to EUROSTAT³, the selected countries differ widely in their levels of public healthcare spending, with Germany, France, and Sweden devoting the largest shares of their GDP to healthcare. Spain and Italy positioned around average spenders, while Poland, Ireland, and Lithuania invest a smaller share of their GDP in healthcare services. In addition, these countries vary considerably in the extent to which households are required to contribute privately to healthcare financing. As reported by EUROSTAT³, the highest private contributions (as a share of GDP) are observed in Portugal, Belgium, and Lithuania. Finland, Sweden, and Germany fall in a more moderate range, whereas Poland, France, Ireland, and Croatia are among the countries with the lowest reliance on private household contributions.

3.2. Data

The primary database for our empirical analysis is the EU Statistics on Income and Living Conditions (EU-SILC) survey, which we use to estimate the value of ECEC and healthcare services. The EU-SILC provides representative information on household income, demographic characteristics, and living conditions, and serves as the main data source for the European microsimulation model EUROMOD (EM). We use the 2022 EU-SILC wave for all countries, except for Poland, for which the 2021 wave is used.

³ https://doi.org/10.2908/HLTH_SHA11_HCHF



3.2.1. Early childhood education and care

Important for estimating ECEC, the EU-SILC includes information on the weekly use of ECEC services, which is crucial for adjusting the value of these services to reflect their actual usage. This information is appended to the EM input data, as these variables are not included in the standard EM datasets.

To estimate the private contributions for social services, we rely on the tax–benefit policy architecture of the European microsimulation model EUROMOD (EM). The model is typically used to estimate tax liabilities, social insurance contributions, and cash benefits, and it enables cross-country comparisons of households' disposable income (Sutherland & Figari, 2013). Since parental contributions are generally a function of household composition and household income, we can incorporate ECEC policies within the EM-architecture. For this purpose, we use detailed information on the legislation governing private contributions for ECEC services, which is retrieved from the country-specific OECD tax–benefit policy descriptions⁴ for 2024. Since the latest available SILC-data stems from 2022, EM corrects income variables, using income-related uprating indices to match the rest of our analysis which is based on 2024.

The modulation of parental contributions for ECEC services requires us to make some noteworthy assumptions. Firstly, in many European countries, legislation with regard to ECEC services -particularly childcare services - is determined at the regional or subregional level. Here, we apply the legislation of the largest region or the capital region to all children attending ECEC services, as more detailed regional information is scattered and often unavailable. Secondly, we restrict our analysis to publicly provided ECEC services only, including centre-based daycare services and publicly funded preschool or pre-primary education services. Thirdly, we adjust parental contributions based on actual usage. In countries where fees are set on an hourly basis, this rate is multiplied by the number of hours a child attends an ECEC service. In contrast, for countries applying a daily rate, we assume that childcare is used in four-hour blocks. Consequently, a child attending childcare services for 12 hours per week is assumed to attend for one and a half days.

We use information on the full-time equivalent (FTE) public expenditure on pre-primary education per pupil as found in the Eurostat⁵ database (educ_uae_fine09) as a proxy for the FTE value. Since the latest available data stems from 2022, we correct these values, using the consumer price index to match the rest of our analysis which is based on 2024.

3.2.2. Healthcare

The estimation of the value of healthcare services requires information from five different data sources: the EU-SILC, the Household Budget Survey (HBS), Average healthcare spending profiles by age and gender, Healthcare Expenditure by Health Care Functions and Financing Schemes and Household Final Consumption Expenditure by Purpose.

The average healthcare spending profiles by age and gender, used in the Ageing Report 2024 (EC DG-ECFIN, 2024), is provided by the Ageing Working Group. These age-gender profiles, first used by Cruces et al. (2025) to estimate the value of healthcare services, are based on the 2022 national accounts and depict the average public expenditure by age and gender on all healthcare spending categories reported in the System of Health Accounts (SHA), except spending on long-term care.

⁴ A more detailed description of country-specific policies and assumptions can be found in RAND Europe (forthcoming), in which a comparable exercise based on 2021 tax–benefit policies and policy systems was performed for a selection of the above-mentioned countries.

⁵ https://doi.org/10.2908/EDUC_UOE_FINE09

The Household Budget Survey (HBS) is used to account for private healthcare contributions. This survey, conducted in all EU member states and coordinated by Eurostat, contains detailed information on the household expenditure on consumption goods and services. The household consumption patterns are classified using the Classification of Individual Consumption by Purpose codes (COICOP). COICOP 2003 is subdivided into 12 main categories each having several subcategories. In this paper, we focus on household healthcare expenditures (category 06) which includes information on spending on pharmaceutical and medical products, medical services, dental services, paramedical services and hospital services.

As of recently, the HBS was statistically matched with the EU-SILC by the Joint Research Centre. This matching procedure – detailed in Akoğuz et al. (2020) – allows us to estimate the absolute household expenditure on goods and services, facilitating redistributive analysis that accounts for the household consumption patterns. In particular, we use the match⁶ between the 2022 EU-SILC wave (or 2021 EU-SILC in Poland) and the 2015 HBS wave.

In line with the study of Cruces et al. (2025) we correct the total healthcare expenditure imputed by EM using the Healthcare Expenditure by Health Care Functions and Financing Schemes. This EUROSTAT data is disaggregated into the categories of the System of Health Accounts, allowing us to distinguish spending on all health categories, excluding spending on long-term care

Lastly, we use the publicly available EUROSTAT data on the Household Final Consumption Expenditure by Purpose. This data shows the total household consumption expenditure by COICOP-category, including the expenditure on healthcare services. This aggregated expenditure is used to match the total expenditure as calibrated by EM to the national accounts. Additionally, it will be used to calculate the total expenditure on healthcare services, which will be discussed later.

3.3. Refining the calculation of the value of public services

For both types of services, we start from the cost of production approach, which means that each euro that a government spends on a particular service is assumed to create an equivalent value to the recipient. We refine this cost of production approach by taking account of private contributions. For each service, we start from the total cost of the social service, which equals the sum of the private contribution (PC) of the households and the state contribution (SC), as written in the following equation:

$$TC = SC + PC \quad (1)$$

The derivation of each component is however different for ECEC (section 3.3.1) and for healthcare services (section 3.3.2).

⁶ For Italy, no statistical match is available between the 2022 EU-SILC and the 2015 HBS data. To address this, we estimate the average share of household disposable income spent on healthcare services by income decile using the statistical match between the 2010 EU-SILC and 2010 HBS data in the 2024 EM policy system, which updates the 2010 income data to 2024 levels. We then apply these estimated expenditure shares to income deciles simulated using the 2022 EU-SILC data, which more accurately reflects current demographic and income characteristics. This approximation relies on the assumption that the healthcare spending patterns observed in 2010 are representative of those in 2024.



3.3.1. Early childhood education and care

The actual consumption approach is used to measure the value of the in-kind benefit that households derive from publicly provided ECEC. We make a distinction between childcare on the one hand (in most countries for children aged 0-2 year old) and pre-primary education on the other.

The main part of the state contribution for these services is the total amount of subsidies (SUB) granted for the service. The private contribution is the total of parental, or own, contributions (OC) made for the social service. In some countries, households receive a tax deduction or cash benefit (TA) reducing their private contribution, and consequently increasing the total state contribution. This is the case in Belgium, for instance, where part of the private payment for childcare services is tax deductible. As a result, the total contribution can also be written as:

$$TC = (SUB + TA) + (OC - TA) = SUB + OC \quad (2)$$

In order to arrive at a more refined measure of the in-kind benefit of ECEC services, we calculate the average full-time equivalent (FTE) total cost per recipient of the social services. The average FTE total cost per child is calculated as the sum of the average FTE subsidy and the average FTE own (parental) contribution. The latter is differentiated for different ECEC stages (childcare and pre-primary education) and estimated by taking the average parental contributions for children who attend ECEC services on a full-time basis. To derive the FTE subsidy, in line with the cost of production approach, we use the full-time equivalent (FTE) public expenditure on education per pupil from the EUROSTAT database (see section 3.2.1).

We correct the average total cost (\overline{TC}) for the use of the social service by individual i (use_i). We then deduct private contributions (net of tax advantages) paid for the social service of recipient i (PC_i).

The estimation of the value of the social transfer in-kind ($STIK_i$)⁷ the households derives for recipient i can then be written as:

$$STIK_i = \overline{TC} * use_i - PC_i \quad (3)$$

Hence, we distinguish three components of the total cost of ECEC for each individual (or household): the STIK, the private contributions and possible tax advantages (or cash transfers). This refined method provides a more granular estimate of the value of public services, as compared to the standard cost of production approach. Since private contributions are often income-dependent (cf. supra), the social gradient may differ between the so-called *gross* and *net* value of public services.

3.3.2. Healthcare

Due to limited information on the actual use of healthcare services, the allocation of healthcare services is based on an insurance value approach, in which the insurance value is imputed based on each person's characteristics. In particular, the age-gender healthcare spending profiles are used as a proxy for the in-kind value, in accordance with Cruces et al. (2025). This value will be referred to as the state (or public) contribution (SC). Since the age-gender profiles are based on the 2022 national accounts, the values are adjusted, using the consumer price index, to match the rest of our analysis which is based on 2024. In addition, finding

⁷ In the Netherlands and Ireland, ECEC services are market-based, resulting in a somewhat different system. Parents pay fees for childcare services and are compensated through a cash benefit. Although this is technically not an in kind social transfer, it is included due to its close connection to the use of social services.

inspiration in Cruces et al. (2025), a further correction ensures that the estimated aggregate healthcare spending equals the aggregated healthcare spending as reported by EUROSTAT in the expenditure by healthcare function and financing schemes.

We subsequently refine this approach by accounting for the private healthcare contributions. The private contributions of healthcare services are retrieved using the Indirect Tax Tool, embedded into EM, and the connection between the HBS and the EU-SILC. This EM-tool enables us to transpose the share of the household budget spend on health-related consumption to absolute spending adjusted to match the private healthcare spending as reported in the national accounts. Since the value of out-of-pocket payments for healthcare is reported at the household level, we divide the household contributions (PC_{hh}) across household members using the share of the household in-kind health benefit each individual (SC_i) within the household (SC_{hh}) retrieves, yielding an estimate of the household contribution for the social service of recipient i (PC_i).

$$PC_i = PC_{hh} * (SC_i/SC_{hh}) \quad (4)$$

If we would use the PC_i as reported in the data, we would use an actual consumption approach for the private contributions, which would be inconsistent with the method used for the state contribution. Hence, we also apply the insurance value approach to the total cost of healthcare, which allows us to deduce a measure for private contributions that is consistent with that of state contributions. This means that the total cost of healthcare services is distributed amongst all recipients based on the share of the total public cost each individual receives according to the age-gender healthcare spending profiles (see section 3.2.2):

$$TC_i = (SC + PC) * \left(\frac{SC_i}{SC}\right) \quad (5)$$

This means that we calculate an insurance-value based measures of private contributions:

$$PC_i^{IV} = PC * \left(\frac{SC_i}{SC}\right) \quad (6)$$

Since the individualised state contribution is also calculated using the insurance-value logic, formula 5 can be rewritten as:

$$TC_i = SC * \left(\frac{SC_i}{SC}\right) + PC * \left(\frac{SC_i}{SC}\right) = SC_i^{IV} + PC_i^{IV} \quad (7)$$

To calculate the value of the social in-kind transfer for recipient i ($STIK_i$), we deduct the individualised private contribution paid for the healthcare service (PC_i) from the total healthcare cost for recipient i (TC_i), which can be written as:

$$STIK_i = TC_i - PC_i \quad (8)$$



4. The value of ECEC services: empirical outcomes

The analysis of the in-kind benefit of social services for early childhood education and care services is to a large extent determined by the use of social services. Differences in participation are an important explanatory factor of the social gradient of these benefits. Therefore, we start our analysis by showing the distribution of the use of childcare services. Next, we show the distribution of the in-kind benefit households derive from ECEC, as well as its components. We then briefly discuss the impact on inequality and poverty outcomes.

4.1. The use of early childhood education and care services

In Table 2, we show the participation rate in publicly provided ECEC services⁸ by age group. The enrolment rate in publicly subsidized childcare services varies strongly across countries for very young children⁹ (0-2 years), ranging between close to 20% to 75%. In particular, Ireland and Lithuania have relatively few children under 3 years of age who attend publicly-provided childcare places, with a participation rate below 30%. In Belgium (63%), France (63%), Sweden (60%) and particularly the Netherlands (76%), participation in publicly-provided ECEC services is high. The enrolment in publicly-provided ECEC services for children between the age of 3 and 5 years old is more universal, and similar across European Countries. Except for Croatia (69%), the participation rate exceeds 80% and in almost half of the countries exceeds 90%.

Table 2: Participation rate in early childhood education and care (ECEC) publicly-provided services, by age group

Country	0-2 year	3-5 Year
Belgium	62.5%	92.8%
Germany	34.0%	82.4%
Spain	59.0%	97.5%
Finland	44.9%	89.8%
France	62.5%	93.1%
Ireland	21.3%	89.1%
Italy	42.9%	95.8%

⁸ In our analysis, we focus on the public provision of childcare services. In some countries, private or informal childcare is more prevalent and can even be state supported through cash benefits. Consequently, our table does not fully capture the actual use of all ECEC services. However, it provides a close approximation of actual usage patterns in countries with higher levels of formal childcare coverage.

⁹ Differences in the duration of maternity leave may influence enrolment rates in early-stage ECEC services.

Lithuania	27.1%	89.7%
Netherlands	76.4%	98.2%
Poland	36.7%	81.1%
Portugal	59.8%	85.2%
Sweden	60.3%	95.4%
Croatia	36.6%	69.1%

Source: Authors' calculations based on micro-data from EU-SILC 2022 (2021 in PL)

A breakdown of the participation rate by income quartile (see Table 3), shows that the use of publicly-provided ECEC services also varies within countries. In most European countries children from higher-income families participate significantly more in ECEC services, a finding consistent with previous research on inequalities in childcare use (Van Lancker & Ghysels, 2016; Pavolini & Van Lancker, 2018). Across all countries, children under the age of 3 years old in lower income quartiles are less likely to use publicly-provided childcare services. The magnitude of these differences, however, varies considerably. In Belgium, France, Ireland, the Netherlands, Poland and Portugal, the difference exceeds 40 percentage points (pp). In Nordic countries the difference is less than 10pp. Among children aged 3 and 5 years old we find a more equal use of ECEC services across the income distribution. Although children in the higher income groups continue to attend ECEC services more frequently, the difference between the bottom and upper quartile narrows to between 0pp and 20pp. Only in Croatia does the difference remain substantial, exceeding 30 percentage points.

Table 3: Participation rate in early childhood education and care services, by age group and income quartile

Age	Quartile 1 (bottom)		Quartile 2		Quartile 3		Quartile 4 (top)	
	0-2y	3-5y	0-2y	3-5y	0-2y	3-5y	0-2y	3-5y
Belgium	36.4%	93.3%	52.6%	90.0%	67.4%	94.0%	80.3%	93.4%
Germany	23.8%	71.7%	32.7%	84.6%	36.2%	84.3%	45.4%	88.5%
Spain	45.5%	95.1%	62.2%	98.4%	63.6%	98.9%	68.6%	98.9%
Finland	37.5%	80.8%	47.3%	88.6%	51.4%	95.0%	44.4%	95.7%
France	36.8%	90.1%	49.3%	94.1%	82.5%	95.8%	87.1%	94.4%
Ireland	2.4%	75.1%	7.6%	89.6%	24.1%	96.8%	43.5%	93.0%
Italy	28.4%	91.8%	35.1%	96.5%	48.4%	96.8%	55.9%	98.6%
Lithuania	24.5%	78.7%	19.6%	90.3%	21.6%	92.8%	39.5%	93.4%
Netherlands	43.9%	98.2%	72.3%	95.2%	82.9%	98.9%	91.6%	99.6%
Poland	15.7%	71.2%	28.1%	77.4%	41.2%	89.5%	52.7%	84.6%



Portugal	39.9%	78.0%	48.7%	84.8%	71.8%	89.3%	78.9%	87.1%
Sweden	57.0%	92.4%	57.6%	96.1%	65.2%	97.4%	64.6%	97.0%
Croatia	9.2%	49.1%	25.7%	53.6%	51.0%	86.5%	41.8%	83.0%

Source: Authors' calculations based on micro-data from EU-SILC 2022 (2021 in PL)

4.2. Value of early childhood education and care services

In what follows, we show the average Social Transfer In-Kind (STIK) households derive from the use of ECEC service using our improved valuation approach. In addition, we display the averages of the different components: (1) total cost (which refers to the total cost corrected for the actual use of the social service), (2) the private contribution and (3) tax/cash benefits.

In Table 4, we present a breakdown of the average monthly in-kind value household receive from ECEC services at the population level. Because only a relatively small share of the population is entitled to ECEC services, the averages are generally low. Nevertheless, there is substantial cross-country variation. The value of STIKs is highest in Scandinavian countries, amounting to almost €60 per month in Sweden and €46 per month in Finland. West-European countries, including Belgium, the Netherlands, France and Germany, follow with average values ranging between €22 per month and €34 per month. The lowest values can be found in South European countries (€9.5-€13 per month) and East European countries (€5-€7 per month) with Lithuania as an exception (€18 per month). The Nordic countries do not have the highest average private contributions, although they are higher than those observed in East- and South-European countries. The highest average private contribution can be found in the Netherlands (€11 a month) Ireland (€8.3 a month), two countries with a market-oriented approach, closely followed by Belgium (€6.5 a month).

Table 4: Adjusted average childcare costs, private contributions, tax deductions/cash support, and in-kind benefits, at the population level (in EUR per month)

Country	Total cost	Private Contribution	Tax/cash benefit	STIK
Belgium	40.7	4.6	1.9	34.2
Germany	23.9	0.6	0.0	23.3
Spain	13.6	1.4	0.0	12.2
Finland	49.4	3.7	0.0	45.7
France	25.8	2.6	1.5	21.7
Ireland	24.2	8.3	0.0	15.9
Italy	14.6	1.0	0.8	12.9
Lithuania	20.8	2.7	0.0	18.1
Netherlands	40.1	11.1	0.0	29.0
Poland	11.9	2.1	0.0	9.8
Portugal	9.8	0.0	0.0	9.8
Sweden	62.2	3.9	0.0	58.4
Croatia	8.1	1.1	0.0	7.0

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

When focusing on the subpopulation using ECEC services¹⁰ among children younger than 3 years (Table 5), the substantial cross-country variation in the in-kind transfers for childcare services is clear, ranging from €234 a month in Croatia to €1030 a month in Finland. Nordic users still retrieve the highest in-kind transfers with an average monthly value of €1030 in Finland and €970 in Sweden. Germany closely follows with an average monthly value around €800. In France and Belgium, the in-kind benefit amounts to approximately €565 and €700 per month, respectively. However, the effective value for households is around €100 higher due to tax relief. The Netherlands and Portugal now portray similar average levels of in-kind transfer between €480 and €560 per month.

¹⁰ In most countries, ECEC services are subdivided into stages that typically correspond to the age of the child. For consistency reasons across countries, we use the child's age to show results.



Table 5: Adjusted average childcare costs, private contributions, tax deductions/cash support, and in-kind benefits for children under age 2 using ECEC services (in EUR per month)

Country	N	Total cost	Private Contribution	Tax/cash benefit	In-kind benefit
Belgium	269	1020.3	226.8	91.1	702.4
Germany	594	791.5	18.2	0.0	773.3
Spain	702	425.0	115.1	0.0	310.0
Finland	233	1115.3	86.2	0.0	1029.1
France	569	846.3	180.8	104.3	561.2
Ireland	73	691.0	449.3	0.0	241.8
Italy ¹¹	229	637.8	148.4	123.2	366.2
Lithuania	64	457.7	57.3	0.0	400.5
Netherlands	416	855.1	355.7	0.0	499.4
Poland	389	304.7	33.8	0.0	270.9
Portugal	169	482.7	0.0	0.0	482.7
Sweden	370	1060.1	92.5	0.0	967.6
Croatia	63	285.4	51.5	0.0	233.9

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

The breakdown of the components of ECEC services shows that the high in-kind value received by childcare users in the Nordic countries can be attributed to a combination of high average total costs and relatively moderate private contributions. In Belgium, for example, the average total cost is comparable to that of the Nordic countries, however, the average private contribution is more than two times higher - €227 per month in Belgium compared to approximately €90 per month in the Nordic countries. Ireland (€449 per month) and the Netherlands (€356 per month), are other countries where users of ECEC services face relatively high private contributions. In contrast, private contributions are low in Germany (less than €20 per month), and in Portugal, ECEC services for children under the age of three have recently become free of charge.

As shown in Table 6, the decomposition of the value of ECEC services for users aged three to five does not cause a reranking of countries. The average in kind value remains highest in the Scandinavian countries, amounting to around €1,000 per month, and lowest in Croatia, at approximately €234 per month. In several countries, children transition from childcare services to preprimary education between the ages of two and

¹¹ In Italy, parents are entitled to a non-refundable tax credit equal to 19% of childcare expenses, limited to €120.08 per child per year in 2024. However, in Rome, the reference area for this analysis, parents are also entitled to a cash benefit ranging from €1,500 to €3,000 per child, depending on household income, for children attending childcare under the age of three. Because the tax credit and the cash benefit cannot be claimed simultaneously, we assume that all parents opt for the more generous cash benefit.

three, these services are often provided free of charge. In countries where a private contribution is still required, the average private payment for children aged three to five is lower than for children under the age of three.

Table 6: Adjusted average childcare costs, private contributions, tax deductions/cash support, and in-kind benefits for children aged 3-5 using ECEC services (in EUR per month)

Country	N	Total cost	Private Contribution	Tax/cash benefit	In-kind benefit
Belgium	455	608.4	0.0	0.0	608.4
Germany	1527	682.5	17.1	0.0	665.4
Spain	1594	323.1	0.0	0.0	323.1
Finland	581	1131.5	89.6	0.0	1041.9
France	1063	482.0	0.0	0.0	482.0
Ireland	324	555.9	149.4	0.0	406.5
Italy	790	440.1	0.0	0.0	440.1
Lithuania	273	490.4	66.8	0.0	423.7
Netherlands	630	689.5	104.2	0.0	584.8
Poland	1037	327.6	66.1	0.0	261.4
Portugal	413	284.5	0.0	0.0	284.5
Sweden	671	1066.8	63.8	0.0	1003.0
Croatia	161	278.6	44.5	0.0	234.1

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

4.3. Distribution value early childhood education and care services

Figure 2 presents the distribution across income quartiles of the average in-kind value and its components received by ECEC users under the age of 3. By incorporating both the refined valuation method (diamond markers) and the standard approach (which does not take account of variation in private contributions; circle markers), we can compare the two methods and highlight the social gradient captured through the refined approach. For illustrative purposes, we present the decomposition for four countries, the corresponding figures for the remaining countries are provided in Appendix 1.

For Belgium, the value of ECEC STIKs increases slightly from the first to the third income quartile and then declines marginally in the top quartile. This pattern clearly indicates that the income-dependence of childcare fees primarily provides an advantage for the bottom half of the income distribution. Our results show that the average total cost gradually rises across income quartiles, suggesting that households in the lower income quartiles not only participate less in formal ECEC services but also spend fewer hours in these services. In



addition, the Belgian tax deduction, calculated on the basis of private contributions, primarily benefits higher-income families. When comparing the standard approach with the refined valuation method, we observe that the average value for children in the lower income quartiles is higher under the refined method, while values converge for children in the higher quartiles.

In Finland, we observe a more clearly pronounced negative relationship between the average value of the STIK and the income quartile. As in Belgium, private contributions in Finland are income-dependent and increase with household income. However, in contrast to Belgium, the number of hours spent in childcare is more uniform across the income distribution, resulting in a more equal distribution of the total cost. A comparison of the two valuation approaches shows that the refined method more effectively captures the social gradient. While the standard approach remains relatively stable, and even increases slightly from the lower to the higher income deciles, the refined valuation method yields higher average values for children in the lower income quartiles and lower values for those in the higher quartiles.

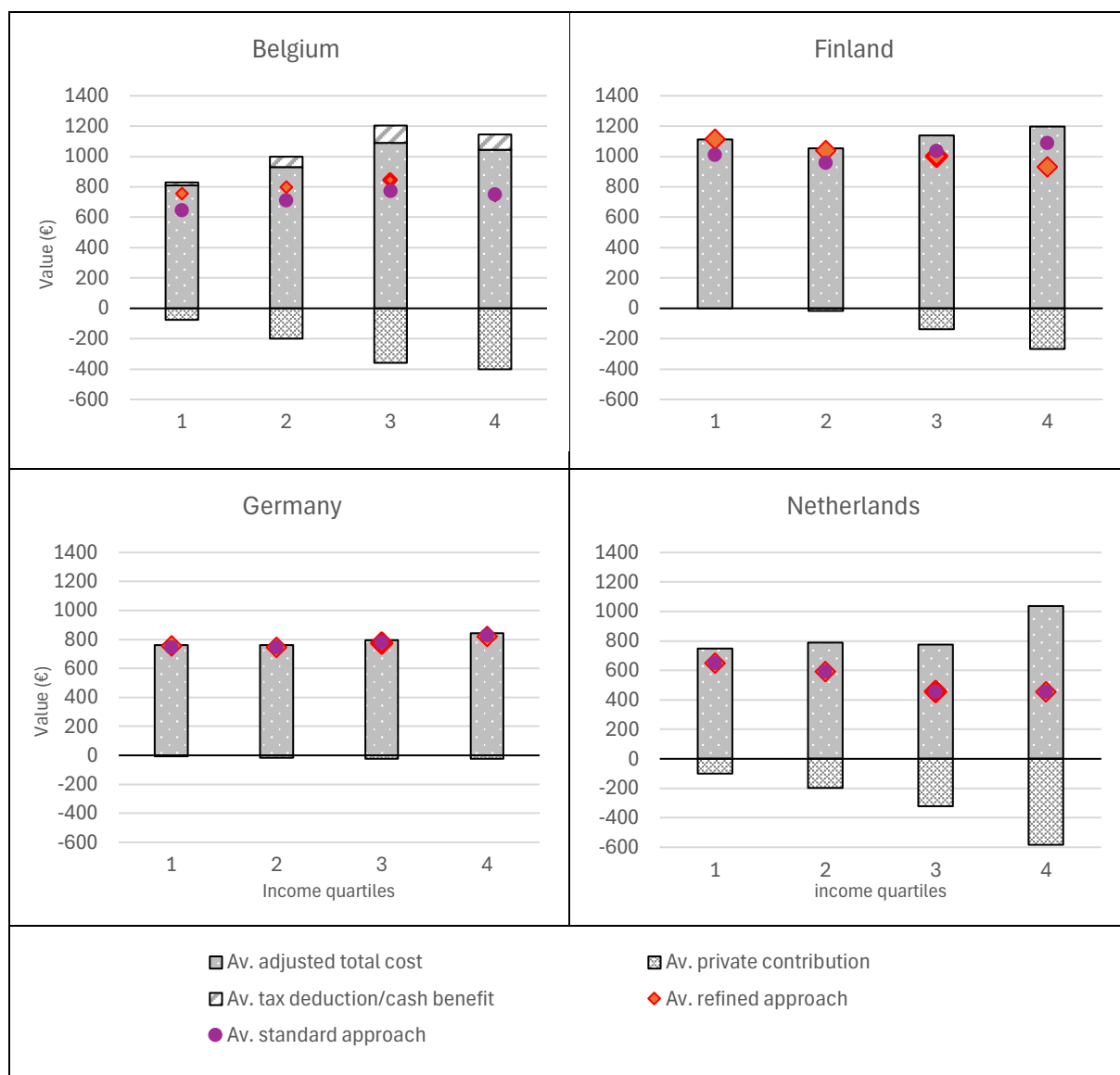
In contrast to Finland and Belgium, we observe no substantial differences between the standard approach and our refined valuation approach for Germany and the Netherlands. In Germany, the average total cost of ECEC provision remains relatively stable across the income distribution, suggesting smaller differences in the number of hours enrolled in ECEC services across income quartiles. Moreover, private contributions are generally low, being free of charge for parents receiving citizen's benefits, social assistance, the child-benefit supplement, housing benefits, or benefits under the Asylum Seekers Benefits Act. For other households, fees amount to a maximum of €23 per month. As a result, the in-kind value of ECEC services for children under the age of three is nearly universal.

In the Netherlands, we find considerable variation in the in-kind value of ECEC services across income quartiles, with significantly higher values for lower-income households. However, due to the market-based structure of the first stage of ECEC, where parents pay an upfront fee to childcare providers and subsequently receive a partial reimbursement through a cash supplement, there is no divergence between the standard approach and our refined valuation method. The cash supplement, which we take as an in-kind transfer because of its close link to ECEC usage, is highly income-dependent and identical in both approaches. This income-related benefit results in average net private contributions, calculated as the parental fee minus the cash benefit, being substantially lower for households in the lower income quartiles.

Interestingly, Appendix 1 reveals a relatively consistent pattern across countries that use similar fee structures. In countries with income-based private contributions for ECEC services - such as Belgium, Finland, France, Italy, Croatia, and Sweden- we observe clear differences between the standard approach and the refined valuation approach. The in-kind value received by ECEC users is generally substantially higher in the lower income quartiles, while it is either comparable or lower in the higher income quartiles. In France and Italy, this pattern does not necessarily translate into a higher average in-kind benefits for children in lower-income households, as these households tend to use fewer hours of ECEC services, similar to the Belgian case. Moreover, the divergence between the two valuation approaches tends to be larger in countries where the relationship between household income and private contributions is more strongly positive.

Conversely, in countries where fee structures do not, or only minimally, depend on household income, such as Poland, Spain, and Lithuania, or where childcare services are free of charge, such as Portugal, the refined valuation approach does not yield substantially different outcomes compared to the standard approach. The Irish ECEC system is comparable to that of the Netherlands, as previously discussed. Although the income-based cash benefit generates differences in the in-kind valuation between higher and lower income quartiles, it does not produce differences between the two valuation methods.

Figure 2: Decomposition value ECEC services for enrolled children under two years of age



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

Figure 3 shows the same information for children aged 3-5 years. To highlight the contrasts with ECEC users under the age of 3, we use the same exemplary countries. Figures for all remaining countries are included in Appendix 2.

In Belgium, children aged 3 to 5 typically participate in the second stage of ECEC services, namely preschool education (kindergarten). This stage is free of charge and almost universally attended, which explains the notable differences between Figures 2 and 3. First, we observe that the average total cost is similar across income quartiles, indicating that the number of hours spent in preschool education is effectively identical for all households (i.e. quasi full-time attendance). Since there is no private contribution, the in-kind value received by ECEC users does not differ between the two valuation approaches.

In Finland, the provision of childcare does not differ between children under the age of 3 and those aged 3 to 5, only six-year-olds receive four hours of free ECEC services per day. Consequently, the interpretation of the results for the two younger age groups is largely similar. Private contributions remain income-based, resulting

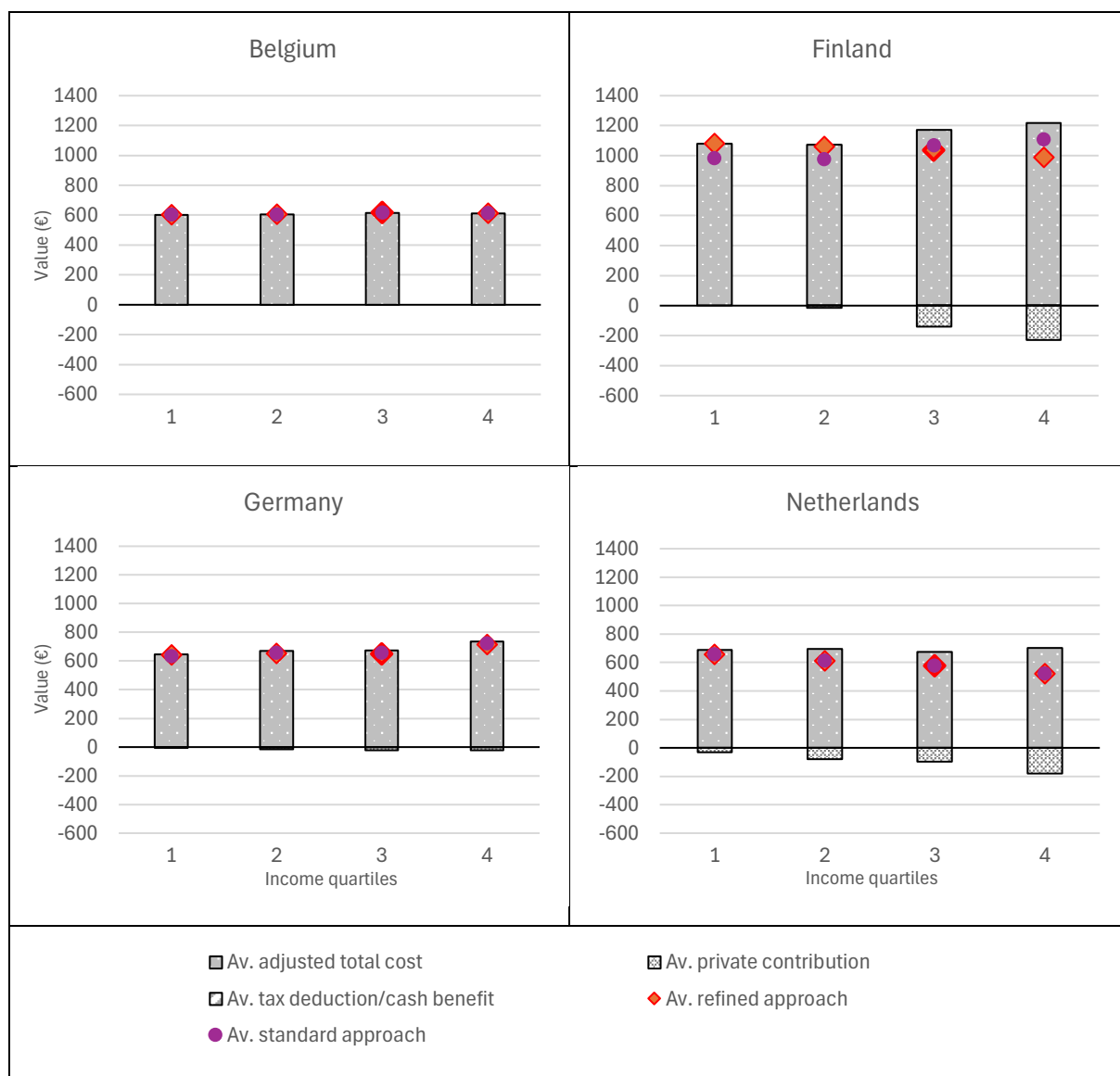


in lower average contributions in the lower income quartiles and higher contributions in the upper quartiles. Combined with the relatively uniform average total cost across income groups, this produces a comparable, slightly declining pattern in the in-kind value received by ECEC users as household income increases.

As in Finland, the organisation of ECEC services for children aged 3 to 5 does not differ from that for children under the age of 3 in Germany. Consequently, the interpretation outlined above also applies to this older age group.

Similar to Belgium, most children between 3 and 5 attend preschool education in the Netherlands, which is entirely publicly funded. However, the transition from childcare to preschool occurs only when a child turns 4 years old. As a result, childcare and preschool services are combined in Figure 3. This produces a slight income-related gradient in the in-kind value of ECEC services, although the pattern is less pronounced than in Figure 2. The previously discussed marketised approach explains the overlap between both valuation methods.

Figure 3: Decomposition value ECEC services for enrolled children between three and five years of age



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

Appendix 2 demonstrates that, in addition to Belgium and the Netherlands, Spain, France, Italy, and Portugal also transition to free-of-charge second-stage ECEC services between the ages of 2 and 3. This results in identical valuations under both approaches. The limited variation in in-kind values across income quartiles in these countries can largely be attributed to differences in the number of hours that children attend ECEC services.

For countries that continue to require an income-based private contribution, apart from Finland, the difference between the two valuation approaches is smaller for children aged 3 to 5 than for younger children. This pattern generally reflects a convergence of private contributions between lower- and higher-income households, due to, by example, reduced fees or discounts for children in this age group.

4.4. Effect of early childhood care and education services on income, poverty and inequality

To deepen our understanding of how the different valuation methods for social services affect household income, and their impact on monetary poverty and inequality, we compare equivalised household disposable incomes, poverty rates, and Gini coefficients across these methods. Specifically, we present distributive outcomes for the baseline income, the disposable income after deducting out-of-pocket (OOP) payments, the extended income using the standard approach (EXTS), and extended income using the refined valuation method (EXTR). These concepts are reported both at the population level and for households with a young child (under 6 years old). In addition, we apply the cross-European simplified needs-adjusted equivalence scale developed by Aaberge et al. (2024) to account for differences in household needs.

4.4.1. Population level

In Table 7, we present the average yearly equivalised household disposable income for the different income concepts at the population level. As expected, baseline equivalised household disposable incomes vary substantially across countries. The highest levels are observed in Ireland, where the average equivalised disposable income is approximately €38,300 per year, followed closely by the Netherlands, Germany, Belgium, Sweden, and Finland. The lowest level is found in Croatia, where average equivalised household disposable income amounts to €14,200 per year.

Although the incorporation of ECEC services into the different income concepts has only a modest impact at the population level, owing to the relatively small share of households with young children who benefit directly from these services, the results nevertheless highlight the conceptual differences between the OOP approach, which deducts private contributions from household disposable income, and the approaches based on an extended income concept. With the exception of Portugal, where ECEC services are free of charge, we observe that equivalised household income under the OOP method is lower than under the baseline income concept with considerable differences across countries. In the Netherlands and Ireland, the reduction in equivalised household disposable income exceeds €600 and €250 per year, respectively, whereas in the remaining countries the divergence between the baseline and the OOP method is negligible.

Comparing the baseline income concept with those that incorporate an extended income measure reveals larger effects on equivalised household income. Under the extended income approaches, the in-kind value of ECEC services increases equivalised disposable income. The largest gains are observed in Finland (€1,020 per year) and Sweden (€1,320 per year), which is unsurprising given their combination of high state support,



moderate private contributions, and high uptake of ECEC services. By contrast, the smallest effects are found in Croatia (€160 per year), Portugal (€220 per year), and Poland (€230 per year). These countries belong to the group with relatively low FTE investments per child in ECEC services. Moreover, Croatia and Poland also exhibit some of the lowest participation rates in publicly provided ECEC services for children under three-years-old.

A comparison of the standard approach with the refined valuation method shows no meaningful differences at the population level, amounting to at most €30 per year. This aligns with expectations. While the two methods allocate the total benefit mass (slightly) differently across ECEC users, the aggregate value of the benefit remains largely unchanged.

Table 7: Average equivalised disposable household income by income concepts, without needs adjustment at population level in EUR per year

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	32563.0	32449.0	33343.6	33369.9
Germany	33315.1	33302.0	33839.3	33837.4
Spain	21763.7	21732.9	22034.5	22040.0
Finland	32581.0	32498.7	33603.8	33615.1
France	28937.7	28849.1	29421.2	29457.8
Ireland	38280.3	38013.0	38642.7	38642.7
Italy	23411.4	23373.7	23705.8	23715.0
Lithuania	16753.5	16693.8	17156.9	17154.7
Netherlands	37401.7	36791.4	38062.4	38062.7
Poland	14056.0	14008.4	14284.8	14276.0
Portugal	16820.7	16820.7	17037.0	17037.5
Sweden	29435.2	29348.2	30757.8	30755.4
Croatia	14211.1	14187.3	14370.3	14369.4

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

In Table 8, we examine the redistributive implications of the different income concepts at the population level. Consistent with previous research, we observe substantial cross-country variation in at-risk-of-poverty rates, ranging from 11% in Belgium to 19.6% in Italy. In general, Western European countries such as Belgium, the Netherlands (12.8%), and France (13.4%), as well as the Scandinavian countries - Finland (12.6%) and Sweden (13.1%) - display relatively low poverty rates. In contrast, Southern European countries, namely Italy and Spain (19.5%), along with Croatia (19.4%), exhibit notably higher poverty rates.

Similar to the analysis based on equivalised disposable income, methodological differences become clearly visible when comparing poverty statistics across the various income concepts. While the OOP approach

increases poverty rates in some countries, the extended income approaches reduce poverty in all countries, although the overall impact at the population level remains generally small.

In most countries, the OOP approach does not affect the poverty rate relative to the baseline. This limited overall effect can be attributed to several factors: low ECEC usage among households in the lower income quartiles (e.g. Lithuania and Croatia), strongly income-dependent fee structures (e.g. Belgium and France), or generally low private contributions (e.g. Germany and Portugal). The largest increases in the at-risk-of-poverty rate at the population level are found in the Netherlands (a 0.9pp increase), Ireland (0.4pp), and Sweden (0.3pp). The Netherlands and Ireland are the countries with the highest average private contributions among ECEC users. Sweden, by contrast, combines a strongly income-based fee scheme with a universally high uptake of ECEC services, which likely explains the comparatively larger impact on poverty in this context.

Adding the value of in-kind benefits to household income generally has a stronger effect on poverty rates than the OOP approach. Relative to the baseline, the standard approach reduces the poverty rate by at least 0.4 percentage points in Croatia and by as much as 2.5 percentage points in Sweden. With the exception of Sweden, however, the magnitude of public investment per pupil does not necessarily translate into a substantially larger reduction in poverty. This suggests that other underlying factors, such as the relative income position of households with young children, may partially explain the variation in effect sizes. Only in Finland, Sweden, and Lithuania do the standard and refined approaches yield any difference at the population level, and even then, the difference remains negligible, at most amounting to 0.2 percentage points.

Similar to the baseline poverty rates, we observe substantial cross-country variation in the Gini coefficients. Belgium exhibits the lowest level of income inequality (0.2181), whereas the highest inequality is recorded in Lithuania (0.3367). Apart from Lithuania, relatively high inequality is also found in Germany (0.2921), Spain (0.3198), Italy (0.3085), and Portugal (0.3072).

In general, neither the OOP approach nor the extended income approaches have substantial effects on the Gini coefficient, although the impact of the latter is slightly larger. The OOP approach marginally reduces inequality in all countries except Germany, Spain, Ireland, the Netherlands, and Sweden. Consequently, there does not appear to be a clear-cut relationship between the structure of private contributions and inequality outcomes. By contrast, the extended income approaches consistently yield lower inequality estimates, underscoring the equalising effect of ECEC services identified in previous studies. Once again, the inequality measures for the standard and refined approaches differ only minimally.



Table 8: Poverty rate and Inequality by income concept at population level without needs adjustment

Country	Poverty rate				Inequality (Gini)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)	Base-line	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	11.0%	11.0%	10.3%	10.3%	0.2181	0.2177	0.2167	0.2167
Germany	14.9%	14.9%	14.1%	14.1%	0.2921	0.2922	0.2906	0.2905
Spain	19.5%	19.6%	18.6%	18.6%	0.3198	0.3201	0.3168	0.3167
Finland	12.6%	12.6%	11.3%	11.2%	0.2724	0.2718	0.268	0.2671
France	13.4%	13.5%	12.0%	12.0%	0.2875	0.2871	0.2848	0.2849
Ireland	18.7%	19.1%	17.7%	17.7%	0.2821	0.2828	0.2817	0.2817
Italy	19.6%	19.7%	18.6%	18.6%	0.3085	0.3084	0.3054	0.3052
Lithuania	18.0%	18.0%	16.6%	16.5%	0.3367	0.3372	0.3321	0.3319
Netherlands	12.8%	13.7%	11.8%	11.8%	0.2411	0.2444	0.2382	0.2382
Poland	14.4%	14.7%	13.8%	13.8%	0.2558	0.2564	0.2544	0.2545
Portugal	16.0%	16.0%	15.5%	15.5%	0.3072	0.3072	0.3053	0.3053
Sweden	13.1%	13.4%	10.6%	10.4%	0.2482	0.2488	0.2414	0.2411
Croatia	19.4%	19.4%	19.0%	19.0%	0.2842	0.284	0.2839	0.2837

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

Table 9 presents the average equivalised household disposable income at the population level, applying the cross-European needs-adjusted equivalence scale developed by Aaberge et al. (2024). This scale accounts for the needs associated with non-cash income components, which conventional equivalence scales are unable to capture. As the baseline and OOP approaches rely exclusively on cash income components, they remain unaffected by this adjustment. Consequently, our focus lies primarily on the two approaches in which the in-kind value of ECEC services is incorporated into the income concept. The needs-adjusted equivalence scale applies specifically to children eligible for ECEC services and therefore also accounts for unmet needs in ECEC provision.

In contrast to the results presented in Table 7, we find that the needs-adjusted equivalence scale substantially reduces the difference between cash disposable income and the extended income concepts. In most countries - Belgium, Germany, Spain, France, Italy, Lithuania, the Netherlands, Poland, Portugal, and Croatia - the differences between the two income concepts become negligible, amounting to no more than €140 per year. Only in Ireland, Sweden, and Finland do more notable differences emerge. In Ireland, the average equivalised income is approximately €400 per year lower than in the baseline, decreasing from €38,280 to €37,900. It is worth noting that, under the regular equivalence scale, Ireland experienced an increase in average equivalised disposable income. In Sweden and Finland, we continue to observe increases in equivalised disposable income, amounting to approximately €600 and €400 per year, respectively, although these changes are considerably smaller than those reported in Table 7. Regardless of the equivalence scale applied, we do not

observe meaningful differences between the standard and refined approaches. Across all countries, the differences range between €0 and €30 per year.

Table 9: Average equivalised disposable household income by income concepts, with needs adjustment at population level

Country	Baseline (cash)	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	32563.0	32449.0	32706.5	32730.7
Germany	33315.1	33302.0	33319.7	33318.0
Spain	21763.7	21732.9	21755.0	21760.0
Finland	32581.0	32498.7	32973.9	32983.8
France	28937.7	28849.1	28970.8	29004.7
Ireland	38280.3	38013.0	37901.3	37901.3
Italy	23411.4	23373.7	23393.4	23402.1
Lithuania	16753.5	16693.8	16794.7	16792.6
Netherlands	37401.7	36791.4	37393.7	37394.0
Poland	14056.0	14008.4	14026.2	14018.2
Portugal	16820.7	16820.7	16841.3	16841.7
Sweden	29435.2	29348.2	30044.4	30041.5
Croatia	14211.1	14187.3	14191.1	14190.2

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

Table 10 presents the redistributive implications of applying a needs-adjusted equivalence scale to the extended income approaches. In most countries, incorporating the in-kind value of ECEC services continues to reduce poverty, although the magnitude of the effect is notably smaller. The change ranges from a slight increase of 0.2 percentage points in Croatia to a reduction of 1.7 percentage points in Sweden. The countries in which we previously observed differences between the standard and refined approaches - Sweden, Finland, and Lithuania - remain the only cases where such differences are found using the needs-adjusted scale. The Gini coefficients remain unchanged relative to Table 8, indicating that applying a needs-adjusted equivalence scale does not substantially alter income inequality.



Table 10: Poverty rate and Inequality by income concept at population level with needs adjustment

Country	Poverty rate				Inequality (Gini)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	11.0%	11.0%	10.8%	10.8%	0.2181	0.2177	0.2167	0.2167
Germany	14.9%	14.9%	14.6%	14.6%	0.2921	0.2922	0.2906	0.2905
Spain	19.5%	19.6%	19.2%	19.2%	0.3198	0.3201	0.3168	0.3167
Finland	12.6%	12.6%	11.8%	11.7%	0.2724	0.2718	0.2680	0.2671
France	13.4%	13.5%	12.8%	12.8%	0.2875	0.2871	0.2848	0.2845
Ireland	18.7%	19.1%	18.5%	18.5%	0.2821	0.2828	0.2817	0.2817
Italy	19.6%	19.7%	19.3%	19.2%	0.3085	0.3084	0.3054	0.3052
Lithuania	18.0%	18.0%	17.4%	17.0%	0.3367	0.3372	0.3321	0.3319
Netherlands	12.8%	13.7%	12.5%	12.5%	0.2411	0.2444	0.2382	0.2382
Poland	14.4%	14.7%	14.3%	14.3%	0.2558	0.2564	0.2544	0.2545
Portugal	16.0%	16.0%	15.8%	15.8%	0.3072	0.3072	0.3053	0.3053
Sweden	13.1%	13.4%	11.4%	11.2%	0.2482	0.2488	0.2414	0.2411
Croatia	19.4%	19.4%	19.6%	19.6%	0.2842	0.2840	0.2839	0.2837

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

4.4.2. Household with a child under six years old

As early childhood education and care services are targeted exclusively at young children, typically those under 6 years of age, their redistributive implications are not easily distinguished at the population level. Therefore, in this section, we restrict the analysis to households with children younger than 6 years old.

Table 11 presents the mean cash disposable income, mean disposable income after deducting out-of-pocket payments and extended income measured using both the standard approach and the refined method for households with at least one child under 6 years of age. Consistent with the population-level averages, substantial cross-country variation in cash disposable income is observed among households with young children. Polish households have the lowest average cash disposable income - approximately €14,400 per year, whereas Dutch households report the highest, nearing €38,500 per year. In half of the countries examined - Germany, Spain, Finland, France, Ireland, Portugal, and Sweden - the average cash disposable income of households with children under 6 years is lower than the population average. The size of this

difference ranges from roughly €1,000 per year in Portugal to approximately €3,400 per year in Sweden. This pattern can suggest that households with young children tend to be positioned lower in the overall income distribution. The opposite pattern is observed in Lithuania, Croatia, and the Netherlands, where households with young children have cash disposable incomes that are, on average, €800 to €1,100 per year higher than the population average. In Belgium and Italy, the differences are negligible.

Narrowing the analysis to households with children under 6 years of age reveals more pronounced effects for both the OOP approach and the extended income approaches. In Germany, Spain, Poland, Portugal, and Croatia, the difference between cash disposable income and OOP-adjusted income remains relatively small, with average differences ranging between €0 and €200 per year. In Belgium, Finland, France, Italy, Lithuania, and Sweden, private contributions lead to reductions in average disposable income of between €300 and €600 per year. The largest effects are observed in Ireland and the Netherlands, where the inclusion of private contributions reduces average disposable income by approximately €1,100 and €3,500 per year, respectively.

Table 11: Average equivalised disposable household income by income concepts, without needs adjustment for households with a child under six years old

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	32343.5	31783.4	36177.8	36306.9
Germany	32150.2	32070.9	35334.5	35323.1
Spain	19609.8	19409.2	21372.6	21408.2
Finland	30009.1	29542.5	35848.9	35943.2
France	27367.1	26842.2	30231.4	30448.1
Ireland	36680.8	35492.5	38291.6	38291.6
Italy	23668.2	23365.7	26031.6	26105.6
Lithuania	17598.7	17299.9	19581.0	19574.5
Netherlands	38504.2	34959.1	42341.5	42343.7
Poland	14361.7	14152.3	15367.5	15328.6
Portugal	16006.6	16006.6	17598.7	17602.0
Sweden	26027.1	25570.7	32536.2	32523.6
Croatia	15139.0	14985.5	16009.2	16003.1

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

As expected, households with children under 6 years of age receive a substantial amount of in-kind benefits from ECEC services. The smallest difference between cash disposable income and the standard approach is observed in Croatia, where we find an increase of approximately €850 per year. In Sweden, the difference amounts to nearly €6,500 per year, followed by Finland (€5,950 per year), Belgium (€4,000 per year), and the



Netherlands (€3,850 per year). The difference between the standard approach and the refined approach remains negligible across all countries.

Table 12 presents the poverty headcount for children younger than six years old. The countries exhibit substantial variation in young child poverty rates. In Germany, Finland, the Netherlands, and Poland, the poverty rate among young children is below 12%, with Belgium reporting the lowest rate at 8.7%. By contrast, young child poverty is considerably higher in Sweden (17.9%), France (20.7%), and Spain (24.8%).

Subtracting out-of-pocket payments from cash disposable impacts young children differently across countries. In Belgium, Germany, Finland, Portugal, and Croatia, the young child poverty rate is barely affected. In Spain, France, and Italy, the change remains below 1 percentage point. By contrast, sizeable increases are observed in Ireland, Poland, and Sweden, where the poverty rate rises by between 1.3 and 1.9 percentage points. The most pronounced effect is found in the Netherlands, where the young child poverty rate increases from 11.3% to 16.9%, shifting the country from one of the better performers to one of the worst-performing cases.

The inclusion of the in-kind value of ECEC services in an extended income concept presents a markedly different picture, positioning the Netherlands and Sweden among the better-performing countries. Overall, we find that the young child poverty rate is substantially reduced compared to the poverty rate based on cash disposable income. Finland, Sweden, the Netherlands, and Belgium emerge as the strongest performers, each reporting poverty rates below 6 percent. Specifically, the poverty rate declines by 3.2 percentage points in Belgium, 7.7 percentage points in Finland, 5.9 percentage points in the Netherlands, and 13 percentage points in Sweden. Substantial reductions are also observed in the other countries, ranging from 2.3 percentage points in Croatia to 6.6 percentage points in both Italy and Lithuania. Although Spain also experiences a sizeable decline (5.8 percentage points), it continues to exhibit the highest young child poverty rate, reaching 19 percent under the standard approach. Notably, in Lithuania, Finland, and Sweden, the refined approach further reduces the young child poverty rate—by 0.8, 0.5, and 0.6 percentage points, respectively. For the remaining countries, the differences between the standard and refined approaches are negligible.

Table 12: Young child (<6 years) poverty rate without needs adjustment

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	8.7%	8.7%	5.5%	5.5%
Germany	11.8%	11.9%	7.0%	7.0%
Spain	24.8%	25.6%	19.0%	19.0%
Finland	12.0%	12.0%	4.3%	3.8%
France	20.7%	21.0%	13.3%	13.2%
Ireland	14.3%	16.2%	10.3%	10.3%
Italy	16.6%	17.4%	10.0%	9.8%
Lithuania	15.7%	15.9%	9.1%	8.3%
Netherlands	11.3%	16.9%	5.4%	5.4%
Poland	11.5%	12.8%	8.6%	8.7%
Portugal	14.2%	14.2%	11.6%	11.6%
Sweden	17.9%	19.3%	4.9%	4.3%
Croatia	12.2%	12.2%	9.9%	9.9%

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

When the need for ECEC services is taken into account, as shown in Table 13, the overall impact of the standard and refined approaches on household disposable income is significantly reduced. In Germany, Spain, France, Italy, the Netherlands, Poland, Lithuania, and Portugal, the difference between the baseline and the two extended income approaches is negligible. In Belgium, the increase in disposable income is considerably smaller, but still amounts to approximately €700 per year under the standard approach and €800 under the refined approach. In Sweden and Finland, the impact decreases but remains substantial, with an increase of about €3,200 per year in both countries in both approaches. In Ireland and Croatia, accounting for needs leads to a reduction in household disposable income of roughly €1,700 per year in Ireland and €300 per year in Croatia.



Table 13: Average equivalised disposable household income by income concepts, with needs adjustment for households with a child under six years old

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	32343.5	31783.4	33048.5	33167.2
Germany	32150.2	32070.9	32178.2	32167.9
Spain	19609.8	19409.2	19552.7	19585.8
Finland	30009.1	29542.5	32250.0	32333.2
France	27367.1	26842.2	27563.2	27763.9
Ireland	36680.8	35492.5	34995.9	34995.9
Italy	23668.2	23365.7	23524.2	23594.1
Lithuania	17598.7	17299.9	17810.9	17805.1
Netherlands	38504.2	34959.1	38457.2	38459.1
Poland	14361.7	14152.3	14230.7	14195.5
Portugal	16006.6	16006.6	16158.1	16161.2
Sweden	26027.1	25570.7	29208.4	29193.4
Croatia	15139.0	14985.5	14853.1	14846.6

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

The smaller impact of ECEC STIKs on household disposable income when accounting for childcare needs is also reflected in their effect on young child. Nevertheless, with the exception of Croatia, incorporating ECEC STIKs still reduces the number of young children living in poverty. In Poland and Ireland, the poverty rate among young children decreases by 0.4pp and 0.6pp, respectively. Compared to the reduction prior to the needs adjustment, amounting to 3.9pp and 4.0pp, this is significantly lower. In Belgium, Germany, Spain, the Netherlands, and Portugal, the poverty rate for young children still declines by between 1pp and 2pp, although the overall poverty-reducing effect is more than halved. Countries that exhibited the largest reductions in young child poverty before the needs adjustment still showcase the greatest reductions afterwards, albeit the effect being halved in all countries except Sweden.

Table 14: Young child (<6 years) poverty rate with needs adjustment

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	8.7%	8.7%	7.6%	7.6%
Germany	11.8%	11.9%	10.0%	10.0%
Spain	24.8%	25.6%	22.9%	22.9%
Finland	12.0%	12.0%	7.9%	7.1%
France	20.7%	21.0%	17.3%	17.2%
Ireland	14.3%	16.2%	13.7%	13.7%
Italy	16.6%	17.4%	14.3%	14.2%
Lithuania	15.7%	15.9%	12.3%	11.1%
Netherlands	11.3%	16.9%	9.5%	9.5%
Poland	11.5%	12.8%	11.1%	11.1%
Portugal	14.2%	14.2%	12.9%	12.9%
Sweden	17.9%	19.3%	9.3%	8.7%
Croatia	12.2%	12.2%	12.4%	12.4%

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)



5. The value of healthcare services: empirical outcomes

In this section, we present the average Social Transfers in Kind (STIKs) that households derive from the use of publicly provided healthcare services, using our refined valuation approach. In addition, we report the average values of its components: (1) the total cost, and (2) the private contribution¹². In some countries, healthcare expenses are tax deductible. Due to data limitations, these deductions are not accounted for.

5.1. The value healthcare services

In Table 15, we decompose the average in-kind healthcare transfer at the population level. Since healthcare services are used across the entire population, the resulting effects are more pronounced than those observed for ECEC services, although similarly large cross-country differences emerge. The average total healthcare cost is lowest in Croatia, amounting to €145 per month. At the other end, the German average total healthcare cost is more than three times higher, reaching €463 per month. Other countries with relatively high average monthly costs are Ireland (€418), Belgium (€387), France (€371), Sweden (€360), the Netherlands (€359), and Finland (€357). In contrast, Poland, Lithuania, Portugal, Spain and Italy display lower average total healthcare costs, ranging from €160 to €230 per month.

Also in terms of private healthcare contributions, we find considerable cross-country variation. In most cases - specifically in Spain, Finland, France, Italy, Lithuania, the Netherlands, Poland, Portugal, and Sweden - average private contributions range from €56 to €88 per month. Belgium, Ireland, and Germany, which also exhibited comparatively high total healthcare costs, display higher private contributions, amounting to €139, €109, and €104 per month, respectively. Croatia stands out with relatively low average private contributions, amounting to approximately €43 per month.

Countries with the highest average total healthcare costs also record the highest average in-kind social transfers for healthcare services. Germany exhibits the largest in-kind transfer, averaging €354 per month, followed by Ireland (€314), Sweden (€303), France (€296), the Netherlands (€290), and Finland (€270). Despite Belgium's comparatively high total healthcare costs, relatively high private contributions result in a more moderate average in-kind transfer approve approximately €250 per month. The lowest monthly in-kind transfers are observed in Italy (€166), Spain (€155), Portugal (€121), Croatia (€102), Lithuania (€101) and Poland (€93).

¹² In the Household Budget Survey, private contributions are generally reported after reimbursements.

Table 15: Adjusted average total costs, private contributions, tax deductions/cash support, and in-kind benefits for healthcare services at the population level (in EUR per month)

Country	N	Total cost	Private Contribution	In-kind benefit
Belgium	14995.0	386.8	138.7	248.2
Germany	65893.0	462.8	109.3	353.5
Spain	59672.0	214.7	59.8	154.9
Finland	21566.0	357.2	87.5	269.7
France	38843.0	371.4	75.2	296.1
Ireland	11377.0	418.2	104.1	314.1
Italy	44559.0	228.8	62.6	166.2
Lithuania	12098.0	163.2	62.3	101.0
Netherlands	30327.0	359.4	68.8	290.7
Poland	41863.0	160.3	66.4	93.9
Portugal	30102.0	203.4	82.4	120.9
Sweden	20448.0	360.1	56.2	303.9
Croatia	19057.0	145.3	42.9	102.4

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

As highlighted in previous research (Verbist et al., 2012; Marical et al., 2008; Cruces et al., 2025), the need for healthcare services is correlated with age, with older individuals, generally exhibiting large dependence. Therefore, in the subsequent tables, we present the social in-kind healthcare transfer and its breakdown for three age categories – namely children (0-17 years), working age (18-65 years), and the elderly (+65 years).

In Table 16, we break down the average in-kind healthcare cost for children under 18 years old. In comparison to the population level averages, the average total healthcare costs for children are substantially lower. In all countries, the average total cost is more than one-third lower than the population averages. The Portuguese total cost stands out being over 80 percent lower. The highest average monthly total costs are still observed in Germany (€243), Sweden (€233), the Netherlands (€232), Finland (€229), Ireland (€228). Belgium and France, which had amongst the highest average total costs at the population level, show more moderate average monthly healthcare costs for children, totaling €172 per month and €146 per month. Italy (€108), Spain (€96), Lithuania (€83) and Croatia (€72) record moderately to low monthly average healthcare costs for children. In Portugal, the average total cost is exceptionally low, amounting to only €35 per month.

In line with the average total costs, the average private contributions for children are also noticeably lower than those at the population level. In all countries, private contributions are one-third lower than the average private contributions at the population level, and in more than half of the countries it exceeds 50 percent. Private contributions range from €23 per month in Sweden to €46 per month in Germany and the Netherlands. Only in Ireland and Belgium average contributions are higher, amounting to €68 per month, respectively.



Since both the average private contributions and the total costs are between 30% and 60% lower than those at the population level in most countries, similar reductions are observed in the in-kind healthcare benefit received by children. The highest average monthly in-kind healthcare benefits are found in Sweden, Germany, Finland and the Netherlands, ranging from €187 in the Netherlands to €210 in Sweden. Ireland, France and Belgium show more moderate average in-kind benefits, amounting to €160, €111 and €104 per month respectively. In Spain, Italy, Lithuania, Poland and Croatia the in-kind healthcare benefit ranges from €47 to €69 per month. Portugal, where private contributions are high compared to their total cost for children, display the lowest average in-kind benefit, amounting to €9 per month for children.

Table 16: Adjusted average total costs, private contributions, tax deductions/cash support, and in kind benefits for healthcare services for children (<18 years) (in EUR per month)

Country	N	Total cost	Private Contribution	In-kind benefit
Belgium	3069.0	172.4	68.4	103.9
Germany	10557.0	242.8	46.5	196.3
Spain	10943.0	96.1	32.4	63.7
Finland	4821.0	229.4	39.9	189.5
France	8252.0	146.3	35.3	111.0
Ireland	2529.0	228.5	68.2	160.2
Italy	5551.0	108.3	39.1	69.3
Lithuania	1796.0	83.3	25.4	58.0
Netherlands	4927.0	232.3	45.6	186.8
Poland	7324.0	105.6	43.8	61.8
Portugal	3910.0	36.0	27.4	8.6
Sweden	4740.0	232.8	22.8	210.0
Croatia	2226.0	72.2	25.4	46.8

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

In Table 17, we display the decomposition of the in-kind healthcare cost for the working age population. The average total healthcare costs are between 5 and 38 percent lower than overall averages. Germany, France, Belgium, Ireland, Finland, the Netherlands and Sweden have the highest averages, ranging between €381 per month in Germany and €288 per month in Sweden.

The average private healthcare contributions are slightly lower than the population-level averages in all countries, except Belgium and France. The Belgian working-age population, on average, pays the highest private contribution, amounting to €149 per month, followed by Germany (€106 per month) and Ireland (€103 per month). For most other countries, average private contributions for the working population, lie between €56 and €83, with Sweden (€47 per month) and Croatia (€40 per month) as notable exceptions.

Consequently, the average in-kind healthcare benefits for the working age population are lower than the population-level averages. In France and Germany, the working age population, on average, receives the highest in-kind benefit, amounting to roughly €270 per month. The Portuguese working age population retrieves the lowest in-kind benefit from healthcare services with an average in-kind benefit of €54 per month, closely followed by Poland with an in-kind benefit of €63 per month.

Table 17: Adjusted average total costs, private contributions, tax deductions/cash support, and in kind benefits for healthcare services for working age population (18-65 years) (in EUR per month)

Country	N	Total cost	Private Contribution	In-kind benefit
Belgium	8942.0	320.4	148.8	171.6
Germany	40878.0	380.9	106.1	274.8
Spain	37849.0	164.9	58.4	106.5
Finland	13013.0	304.0	78.9	225.1
France	22372.0	352.4	82.9	269.5
Ireland	6489.0	330.5	103.1	227.3
Italy	25000.0	165.6	62.0	103.6
Lithuania	6935.0	148.2	60.5	87.8
Netherlands	17038.0	288.8	65.6	223.2
Poland	24885.0	118.5	55.9	62.5
Portugal	18090.0	126.7	72.8	53.9
Sweden	11803.0	288.0	46.5	241.5
Croatia	11419.0	118.9	40.0	78.9

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

In Table 18, we present the decomposition for the elderly population. The significantly higher values, in comparison to population-level averages, underscore the greater healthcare needs exhibited by the elderly. We observe that the average total healthcare costs are markedly higher than the population-level averages, with values more than twice as high being no exception, amplifying the previously found cross-country variations. The highest average healthcare costs for the elderly are observed in Ireland, amounting to almost €1150 per month, followed by Germany and Belgium with an approximated spending of €900 per month. More moderate average total costs are found in Italy, Spain, Portugal, Finland, France, the Netherlands and Sweden, ranging between €485 per month and €725 per month. In Croatia, the lowest average total cost is observed, equaling €286 per month.

Although, the average private contributions for the elderly do exceed those reported at the population-level, the magnitude of the difference is not comparable to the change in the average total cost. Only in Sweden, the average private contributions for the elderly are twice as high. However, Sweden was one of the countries for



which we observed relatively low private contributions at the population-level. In Belgium, Germany and Ireland, we still observe the highest private contributions, ranging from €172 in Ireland to €188 per month in Belgium. In all other countries, except Croatia - which reports the lowest average private contributions for the elderly - average private contributions range between €81 and €153 per month.

The markedly higher average total cost for the elderly translates into substantially higher in-kind healthcare benefits. In all, but four countries – Finland, France, Lithuania and Sweden – the average in-kind benefit is more than twice as high as those values reported at the population level, and even in these three countries the in-kind benefit is at least 71% higher. The highest in-kind healthcare benefit for the elderly is observed in Ireland, almost reaching €1000 per month. Germany, Belgium, the Netherlands, Sweden and France follow with in-kind healthcare benefits between €559 per month in France and €736 per month in Germany. The lowest average in-kind healthcare benefits for the elderly can be found in Eastern European countries, amounting to €186 per month in Lithuania, €219 in Croatia and €244 in Poland.

Table 18: Adjusted average total costs, private contributions, tax deductions/cash support, and in kind benefits for healthcare services for the elderly (>65 years) (in EUR per month)

Country	N	Total cost	Private Contribution	In-kind benefit
Belgium	2984.0	878.1	187.8	690.3
Germany	14458.0	908.2	172.7	735.5
Spain	10880.0	497.3	89.9	407.4
Finland	3732.0	615.2	152.8	462.4
France	8219.0	651.7	93.1	558.6
Ireland	2359.0	1147.7	171.5	976.2
Italy	14008.0	484.5	80.7	403.8
Lithuania	3367.0	289.2	103.0	186.3
Netherlands	8362.0	725.0	102.6	622.4
Poland	9654.0	372.2	128.5	243.7
Portugal	8102.0	529.0	146.3	382.7
Sweden	3905.0	725.2	122.9	602.3
Croatia	5412.0	285.6	66.2	219.4

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

5.2. Distribution value healthcare services

In Figure 4, we present the distribution of average in-kind healthcare STIKs and its components across income deciles, calculated using the refined valuation approach. For comparison, the valuation based on the standard cost of production approach (circle markers) is also included. The decomposition is discussed for a selection of countries. The corresponding figures for the remaining countries are provided in Appendix 3.

In Belgium, the average in-kind benefit using both the standard and refined approaches generally declines with income, with the notable exception of the first decile. A similar pattern emerges for the average total healthcare costs. Since an insurance value approach is used rather than an actual-use approach, the variation in total costs across income deciles reflects differences in the demographic composition of these income groups, with elderly population clustered in the lower income deciles. Private contributions are lower at the bottom of the income distribution. As a result, incorporating private contributions into the estimation makes the social gradient in healthcare services more visible. Compared to the standard approach, the refined approach yields higher in-kind values in the bottom deciles and lower values in the upper deciles.

In Finland, a similar but less pronounced pattern in average total healthcare costs emerges. Average healthcare costs by decile range between €300 and €400 per month, being lowest in the first decile and highest between the second and fourth decile. Additionally, while lower average private contributions are observable in the first two deciles, no clear differences across income deciles are observable. Given that private contributions are relatively evenly distributed, the difference between the standard and refined approach is less pronounced. The modest progressive pattern is largely explained by the underlying demographic composition of the income deciles.

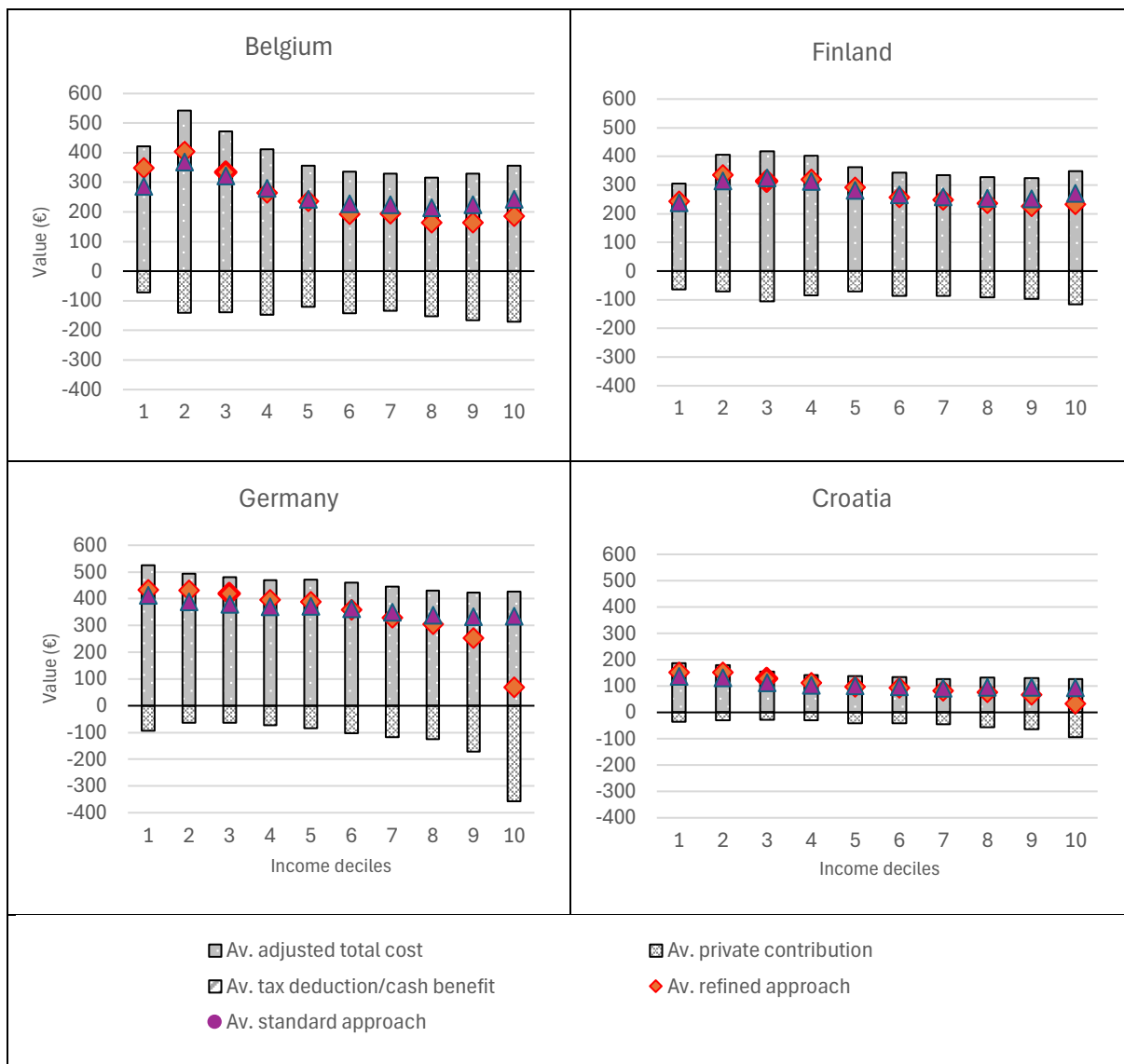
In Germany, average total healthcare costs are distributed relatively evenly across the income distribution, amounting to just over €500 per month in the first income decile and slightly above €400 per month in the highest decile. This relatively flat pattern is particularly evident under the standard approach, which may indicate that elderly individuals, who are most likely to receive more substantive in-kind healthcare transfers, are more evenly distributed across income deciles than in other countries. Except for the first decile, private contributions increase steadily from the second decile onwards and rise sharply in the top income decile. As a result, a clear social gradient becomes visible under the refined approach. Average healthcare STIKs are higher in the first five income deciles and fall below the standard approach estimates from the seventh decile onwards. Overall, the difference in average healthcare STIKs between the lowest and highest income deciles amounts to approximately €400 per month.

In Croatia the distributional pattern closely resembles the pattern observed in Germany. Using the standard approach, a mildly declining relationship between healthcare STIKs and income can be identified. This gradient becomes more pronounced when applying the refined valuation method, as average STIKs are higher in the lower income deciles and lower in the upper deciles relative to the standard approach. This pattern is largely driven by the positive relationship between private healthcare contributions and income. While private contributions remain relatively low and stable in the lower income deciles, they begin to increase gradually from the fifth income decile onwards.

For other countries, we find that France, Italy and Spain have a pattern that resembles that of Germany (see Appendix 3). More mixed patterns are presented for the other countries. In general, we observe a stronger social gradient of healthcare STIKs using the refined approach compared to the standard approach in all countries except Sweden.



Figure 4: Decomposition value healthcare services by income decile



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

5.3. Effect of healthcare services on income, poverty and inequality

We expect that incorporating the in-kind value of healthcare services will have a substantial impact on household disposable income, and, by consequence, on monetary poverty and inequality. Here, we examine the effects of incorporating healthcare STIKs and private healthcare contributions on household disposable income and redistributive outcomes. To account for the uneven distribution of healthcare needs across age groups, we use the healthcare-specific simplified needs-adjusted equivalence scale developed by Aaberge et al. (2024) in addition to the standard OECD equivalence scale. Moreover, given the potentially large shifts in household disposable income resulting from this incorporation, poverty outcomes are reported using both fixed and recalculated (or 'floating') poverty thresholds.

In Table 19, we present the average annual equivalised disposable household income by different income concepts at the population level. Specifically, we distinguish between baseline income, disposable income after deducting OOP payments, extended income estimated using the standard approach, and extended income derived from the refined valuation method.

Deducting private healthcare contributions has a substantial impact on average equivalised disposable household income at the population level, reducing income by between 3 and 11 percent. The largest absolute reduction is observed in Belgium, where OOP-adjusted disposable income declines by more than €2,360 per year, from €32,563 to €30,203. Ireland and Germany also exhibit a sizeable reduction compared to the baseline, amounting to €1,884 and €1,771 per year. The smallest absolute differences are found in Sweden and Croatia, at €863 and €768 per year, respectively. Relative to baseline income, however, the reduction in Sweden is particularly small, at just below 3 percent. In the remaining countries, absolute reductions generally range between €1,000 and €1,400 per year.

The incorporation of healthcare STIKs into an extended income concept using the standard approach increases equivalised household income by between 10 and 18 percent across all countries compared to the baseline. The largest relative increase - approximately 18 percent - is observed in France, closely followed by Germany and Sweden, both recording increases just below 18 percent. The smallest absolute and relative difference compared to the baseline is found in Lithuania, where the average equivalised disposable household income rises by 10.3 percent, corresponding to an absolute increase of €1,721 per year. Further, we find a regional pattern in the absolute changes, matching the differences in living standards. Western European and Scandinavian countries generally exhibit the largest absolute increases, all exceeding €4,400 per year. These are followed by Southern European countries, where disposable income increases compared to the baseline range between €2,200 and €2,900 per year, and by Eastern European countries, where the corresponding increases lie between €1,700 and €1,900 per year.

When comparing the two extended income approaches, we find that the refined valuation approach does not yield substantially different results, although it generally reduces the difference between the baseline disposable income and the extended income concept. In Finland, Lithuania, Croatia, Poland and Sweden, the difference between the refined and standard approaches is marginal, amounting to less than €100 per year. In Germany, Spain, Italy and the Netherlands, the refined approach results in extended income estimates that are just over €100 per year closer to the baseline disposable income than those imputed using the standard approach. Slightly more pronounced differences are observed in Belgium, France, Ireland and Portugal, where the refined valuation reduces the gap by between €213 per year in Portugal and €277 per year in Ireland.



Table 19: Average equivalised disposable household income by income concepts, without needs adjustment

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add extended (EXTR)
Belgium	32563	30203	36992	36736
Germany	33299	31527	39283	39149
Spain	21764	20725	24550	24443
Finland	32583	31195	37116	37049
France	28863	27579	34070	33847
Ireland	38280	36397	44027	43750
Italy	23411	22336	26288	26178
Lithuania	16751	15766	18472	18459
Netherlands	37402	36232	42441	42325
Poland	14056	12865	15814	15785
Portugal	16841	15434	19045	18831
Sweden	29435	28572	34582	34587
Croatia	14222	13454	16084	16029

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Table 20 demonstrates the monetary poverty rates by income concept using a fixed and a floating poverty threshold.

First, we focus on the monetary poverty rate using a fixed poverty threshold. There are large cross-country variations in the baseline at-risk-of-poverty rates at the population level. The lowest baseline poverty rate is found in Belgium (11%), followed by Finland (12.5%), the Netherlands (12.8%), Sweden (13.2%) and France (13.2%). More moderate poverty rates are observed in Poland (14.4%), Germany (14.9%) and Portugal (16.1%). The highest poverty rate, equal to 19.6%, is found in Italy, followed by Spain (19.5%), Croatia (19.4%), Ireland (18.7%) and Lithuania (18%).

Deducting out-of-pocket healthcare payments from the disposable income leads to substantial changes in the ranking of countries with respect to monetary poverty risks. An increase of the monetary poverty risk of 6.3pp drops Belgium from the best-performing country to a moderately performing country. The smallest differences between the baseline and the OOP-adjusted disposable income are observed in Italy, Sweden and the Netherlands, with an increase of the poverty rate of 2.4pp in Italy and 2.5pp in Sweden and the Netherlands. Since the latter two countries already reported amongst the lowest poverty rates, the Netherlands (15.8%) and Sweden (16.1%) are the best-performing countries after the OOP-adjustment. Germany and Croatia, reported slightly larger changes of 2.8pp and 2.7pp, respectively, maintaining their position. The largest change compared to the baseline is observed in Portugal, where the poverty rate increases by 6.6pp. Consequently, Portugal moves up to the group with the highest poverty rates (above 20%), joining Croatia, Lithuania, Ireland, Spain, Poland and Italy.

The methodological difference between the OOP-adjusted method and the extended income approaches are clearly underscored by the difference in the poverty rates. Whereas the OOP-adjusted approach yielded significant increases in the poverty rate, the total opposite is observed for the standard and refined extended income approach. Focusing on the standard approach, we find that the poverty rate is more than halved compared to the baseline. The largest absolute poverty reductions can be found in Ireland (12.4pp) and Germany (11.7pp), leading Germany to be the country with the lowest observed poverty rate, dropping from 14.9% to 3.2%. In Sweden (4.4%), Belgium (4.6%), France (4.6%), Finland (5.2%) and the Netherlands (5.5%) we also observe poverty rates below 6%. Spain (11.6%) and Italy (10.7%), where the highest baseline poverty rates were found, still report the highest poverty after including healthcare STIKs.

The refined valuation approach, again, does not yield very large differences compared to the standard approach, the poverty-reducing effect changing by no more than 1pp. In Italy, Ireland, Poland, and Germany, the poverty-reducing effect is further strengthened under the refined approach; however, the additional reduction exceeds 0.5pp only in Italy and Croatia. The largest poverty-increases between both approaches are found in Sweden (0.7pp) and Portugal (1pp). These small effects do not lead to major reranking between the countries.

Re-calculating the poverty threshold to account for changes in the income distribution (a so-called floating poverty line) substantially alters the observed monetary poverty risks. Although the direction of the effects remains unchanged, the magnitude of the poverty-reducing impact is considerably smaller.

Where we observed increases in the poverty rate exceeding 2pp using the fixed poverty threshold, only 4 out of 13 countries now record poverty rate increases exceeding 2pp when using the OOP-adjusted disposable income. These are Belgium (+3.0pp), Poland (+2.9pp), Portugal (+2.1pp) and Lithuania (+2.1pp). In Ireland (+0.1pp), Croatia (+0.1pp), Italy (+0.4pp), Germany (+0.5pp), France (+0.8pp), Spain (+0.8pp) and the Netherlands (+0.9pp), the poverty rate - using a floating threshold - only marginally increases relative to the baseline. Although the magnitude of the effects differs substantially across countries, no significant reranking relative to the baseline is observed. Belgium (14.0%) drops from being the best-performing country to the third best-performing, while Finland emerges as the best-performing country (13.5%). In Poland and Portugal, poverty rates increase to 17.3% and 18.2%, placing them just below the countries with the highest poverty rates in our analysis.

Similarly, we find that the poverty-reducing effect of incorporating healthcare STIKs using the standard approach is substantially smaller, more than halving in most countries. Nevertheless, including healthcare STIKs in the income concept continues to reduce poverty rates, with reductions ranging from 2.2 pp in Sweden to 6.3pp in Ireland. Belgium remains the country with the lowest poverty rate (8.0%), followed by the Netherlands (9.3%). In Germany, a poverty reduction of approximately 5pp results in a poverty rate of 9.9%, making it the third best-performing country. Spain (16.5%) and Italy (16.2%), which record the highest baseline poverty rates, continue to display the highest poverty levels after accounting for healthcare STIKs.

The incorporation of OOP in the refined approach has a more skewed effect when a floating poverty threshold is used. In six of the thirteen countries, the refined approach results in a further reductions in poverty rates compared to the standard approach - specifically in Germany, Croatia Italy, Lithuania, Poland, Italy and Ireland - although the magnitude of this effect remains small, ranging between 0.1 and 1.1 percentage points. The largest discrepancies between the refined and standard approaches are observed in Belgium and Portugal, where the observed increase in poverty amounts to 1.1pp. Compared to the baseline, the inclusion of healthcare STIKs using the refined approach yields more moderate poverty reductions in Belgium and Sweden, lowering poverty rates by just 1.9 and 1.8pp. Since the refined approach weakens the poverty-reducing impact of healthcare STIKs in Belgium but strengthens it in Germany, Germany records the lowest poverty rate (9.0%).



Table 20: Poverty rate using fixed and floating poverty threshold without needs adjustment

Country	Poverty rate (fixed)				Poverty rate (floating)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	11.0%	17.3%	4.6%	5.0%	11.0%	14.0%	8.0%	9.1%
Germany	14.9%	17.7%	3.2%	3.1%	14.9%	15.4%	9.9%	9.0%
Spain	19.5%	23.1%	11.6%	11.6%	19.5%	20.3%	16.5%	16.9%
Finland	12.5%	16.5%	5.2%	5.3%	12.5%	13.5%	9.7%	9.9%
France	13.2%	16.5%	4.6%	4.8%	13.2%	14.0%	10.1%	10.2%
Ireland	18.7%	21.8%	6.4%	6.2%	18.7%	18.8%	12.5%	12.4%
Italy	19.6%	22.0%	10.7%	10.2%	19.6%	20.0%	16.2%	15.9%
Lithuania	18.0%	22.7%	8.6%	8.9%	18.0%	20.1%	14.0%	13.6%
Netherlands	12.8%	15.3%	5.4%	5.6%	12.8%	13.7%	9.3%	10.0%
Poland	14.4%	20.7%	7.1%	6.9%	14.4%	17.3%	11.6%	11.5%
Portugal	16.1%	22.7%	7.4%	8.4%	16.1%	18.2%	11.7%	12.7%
Sweden	13.1%	15.7%	4.4%	5.1%	13.1%	14.9%	11.0%	11.4%
Croatia	19.4%	22.1%	9.6%	8.6%	19.4%	19.5%	14.7%	13.6%

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Table 21 shows the effect of the incorporation of private contributions and healthcare STIKs on inequality measured using the Gini coefficient. As previously mentioned, inequality strongly differs across countries. The lowest inequality is recorded in Belgium with a Gini-coefficient of 0.2181, followed by the Netherlands (0.2411) and Sweden (0.2482). On the other hand, the highest income inequality is observed in the South-European countries (0.3063-0.3198) and Lithuania (0.3364).

Accounting for out-of-pocket payments increases income inequality in all countries, although the effect size does markedly differ. In 9 out of 13 countries the difference amounts to less than 0.01, barely changing income inequality. In Poland (+0.0180), Portugal (+0.0174) and Belgium (+0.0147), the countries who reported the largest effect on the poverty rates, we also find the largest increase in the Gini-coefficients when OOP are accounted for. Despite the larger change in Belgium, it still records the lowest income inequality (0.2328), albeit being closer to the Netherlands (0.2477) than before the incorporation. Lithuania still reports the highest inequality with a Gini coefficient of 0.3482.

As expected, independent of the valuation approach, healthcare STIKs have an inequality-reducing effect. Remarkably, the size of the inequality reductions are comparable across countries, the reduction of the Gini-coefficient lying between 0.0277 (in Belgium) and 0.0366 (in Ireland), except in Germany where it is reduced by 0.0432. Consequently, no major re-ranking occurs, with Belgium (0.1904) still recording the lowest income inequality and Lithuania the highest (0.3054). Only Germany becomes a more moderately-performing country, while reporting amongst the higher income-inequalities in the baseline.

In contrast to the poverty statistics, we find that in most countries income inequality is further reduced using the refined approach. Only in Belgium, the Netherlands and Sweden, a higher Gini coefficient is observed compared to the standard approach. Since the effect sizes are limited, being less than 0.01 in all countries except Germany, and even below 0.005 in 9 out of 13 countries, there are no substantial differences in comparison to standard approach.

Table 21: Income inequality by income concept without needs adjustment

Country	Inequality (Gini)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	0.2181	0.2328	0.1904	0.1923
Germany	0.2921	0.2933	0.2489	0.2387
Spain	0.3198	0.3289	0.2890	0.2878
Finland	0.2723	0.2817	0.2417	0.2408
France	0.2876	0.2954	0.2490	0.2483
Ireland	0.2821	0.2902	0.2455	0.2438
Italy	0.3085	0.3089	0.2797	0.2706
Lithuania	0.3364	0.3482	0.3054	0.2971
Netherlands	0.2411	0.2477	0.2113	0.2117
Poland	0.2558	0.2738	0.2273	0.2229
Portugal	0.3063	0.3238	0.2737	0.2728
Sweden	0.2482	0.2550	0.2133	0.2153
Croatia	0.2841	0.2896	0.2478	0.2392

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Since the entire population requires healthcare services, albeit it to a differing degree, adjusting for the need for healthcare services by applying the simplified needs-adjusted equivalence, reduces the effect of the inclusion of healthcare STIKs on the household disposable income (Table 22). While before the needs adjustment all countries reported an increase of household disposable income of at least €1700 per year, now Spain (+€798), Italy (+€644), Croatia (+€553), Poland (€538) and Lithuania (€510) report increases of less than €800 per year, being over 3 times smaller than before the needs adjustment. The largest change is still



observed in Germany, adding €3143 per year instead of €5985 per year to the household disposable income. Other countries in which the effect was also almost halved, but still report amongst the higher increases are Ireland (+€2738 per year), France (+2654 per year) and Sweden (€2745 per year).

Surprisingly, the absolute differences between the standard and refined approach are similar with and without needs adjustment, leading to larger relative differences between those approaches when needs are adjusted for. The difference in household disposable income compared to the baseline becomes small (less than €600 per year) in 4 countries – Croatia, Portugal, Lithuania and Poland, and moderately small in Italy and Spain – between €640 and €800 per year. The largest increases in household disposable income are still observed in Germany (+3143 per year) and Sweden (€2745 per year). The most notable, albeit still small, difference between the standard and refined approach is found in Belgium where the €287 per year differences leads to an increase of €1553 per year instead of €1839 per year in the standard approach.

Table 22: Average equivalised disposable household income by income concepts, with needs adjustment

Country	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	32563	30203	34402	34116
Germany	33299	31527	36441	36303
Spain	21764	20725	22562	22444
Finland	32583	31195	34493	34428
France	28863	27579	31517	31301
Ireland	38280	36397	41018	40736
Italy	23411	22336	24056	23930
Lithuania	16751	15766	17277	17261
Netherlands	37402	36232	39498	39374
Poland	14056	12865	14566	14530
Portugal	16841	15434	17378	17150
Sweden	29435	28572	32180	32186
Croatia	14222	13454	14775	14715

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Since needs adjustment leads to a less pronounced increase in household disposable income, it also reduces the poverty reduction resulting from the inclusion of healthcare STIKs in the income concept. In most countries, the poverty-reducing effect - measured using a fixed poverty threshold - is reduced by between 1 and 2pp. Notable exceptions include Poland (2.2pp), Italy (3.1pp), Lithuania (3.9pp), and Croatia (4pp), where the difference exceeds 2pp. Nonetheless, even after needs adjustment, the incorporation of healthcare STIKs still results in a substantial reduction in poverty rates relative to the baseline, ranging from 5pp in Poland to 11pp

in Ireland. Additionally, needs adjustment does not lead to major re-ranking of countries compared to the scenario before adjustment. Germany continues to exhibit the lowest poverty rate (4.4%), while Italy now records the highest rate (13.8%) instead of Spain (13.6%).

The refined estimation method continues to yield substantial reductions in poverty rates across all countries. However, relative to the standard approach after needs adjustment, both the direction and size of the effects differs between countries. In France, the difference between the two approaches is negligible, amounting to just 0.1pp. In Sweden, Spain and Finland, poverty is slightly higher under the refined approach, though the increase is limited to 0.3pp. In Belgium and the Netherlands, the poverty-reducing capacity of healthcare STIKs reduces most sharply - by 0.9pp and 0.7pp, respectively - compared to the standard approach. By consequence, Belgium (6.7%) moves from being the country with the third lowest poverty rate using the standard approach to the fifth place under the refined approach, following Germany (4.0%), France (5.9%) Sweden (6.0%) and Finland (6.4%). Due to the further poverty reduction relative to the standard approach in Italy and the increase observed in Spain, Spain records the highest poverty rate (13.9%), overtaking Italy (12.5%).

Using a floating poverty threshold while accounting for needs makes the poverty-reducing effect of healthcare STIKs largely disappear in most countries and, in several cases, leads to a slight increase of the poverty rate. In contrast to all previous findings using the standard approach, the estimated impact on poverty rates now ranges from a poverty increase of 1.3pp in Poland to a poverty reduction of 2.3pp in Ireland. We observe poverty increases in five countries - Croatia (+0.1 pp), Spain (+0.4 pp), Italy (+0.4 pp), Lithuania (+0.5 pp), and Poland (+1.3 pp). Moreover, whilst the poverty-reducing effect previously exceeded 2pp in every country, after needs adjustment and when a fixed poverty threshold is applied, it now exceeds 1pp in only two countries - Germany (-1.2 pp) and Ireland (-2.3 pp).

Similar to the standard approach, the refined approach correcting simultaneously for needs and changes in median income leads to relatively small changes in poverty rates. However, comparing both approaches yields ambiguous effects. In Germany, the poverty-reducing effect increases from 1.2pp under the standard approach to 2.3pp using the refined approach. By contrast, in Belgium, Portugal, and Sweden, the standard approach yields poverty reductions, whereas the refined approach results in poverty increases, the difference being particularly pronounced in Portugal, where the effect shifts from a reduction of 0.8pp using the standard approach to an increase of 0.3 percentage point using the refined approach. In Finland and France, the poverty-reducing effect of healthcare STIKs becomes negligible, while in Italy and Lithuania the poverty increase diminishes and likewise becomes negligible relative to the standard approach. Finally, in Poland, where the largest poverty increase was observed, the poverty-increasing effect is diminished under the refined approach (+0.9 pp) compared to the standard approach (+1.3 pp).



Table 23: Poverty rate using fixed and floating poverty threshold with needs adjustment

Country	Poverty rate (fixed)				Poverty rate (floating)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	11.0%	17.3%	5.8%	6.7%	11.0%	14.0%	10.3%	11.2%
Germany	14.9%	17.7%	4.4%	4.0%	14.9%	15.4%	13.7%	12.5%
Spain	19.5%	23.1%	13.6%	13.9%	19.5%	20.3%	20.0%	19.9%
Finland	12.5%	16.5%	6.1%	6.4%	12.5%	13.5%	12.3%	12.5%
France	13.2%	16.5%	5.8%	5.9%	13.2%	14.0%	12.7%	13.0%
Ireland	18.7%	21.8%	7.8%	8.4%	18.7%	18.8%	16.5%	16.1%
Italy	19.6%	22.0%	13.8%	12.5%	19.6%	20.0%	20.3%	19.9%
Lithuania	18.0%	22.7%	12.5%	11.9%	18.0%	20.1%	18.6%	18.0%
Netherlands	12.8%	15.3%	6.5%	7.2%	12.8%	13.7%	12.0%	12.4%
Poland	14.4%	20.7%	9.3%	8.9%	14.4%	17.3%	15.6%	15.2%
Portugal	16.1%	22.7%	9.3%	9.8%	16.1%	18.2%	15.3%	16.4%
Sweden	13.1%	15.7%	5.7%	6.0%	13.1%	14.9%	12.8%	13.4%
Croatia	19.4%	22.1%	13.6%	12.6%	19.4%	19.5%	19.5%	18.7%

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

In Table 24, we examine the impact of needs adjustment on income inequality. Consistent with the effects observed for poverty rates, we find a substantial reduction in income inequality compared to the baseline. However, compared to the approach before needs adjustment, the effects are minimal. In France, Ireland, and Sweden, the difference in the Gini coefficient before and after needs adjustment amounts to less than 0.001. In Germany, Spain, Finland, Italy, and Portugal, the change ranges between 0.001 and 0.002, although the direction of the effect differs across countries. While income inequality declines further in Spain, Italy, and Portugal once needs are accounted for, it increases slightly in Germany and Finland relative to the pre-adjustment standard approach. Finally, in Poland, the Netherlands, Croatia, and Lithuania, the effect is more pronounced, with income inequality rising by between 0.004 and 0.007 compared to the pre-adjustment level.

Compared to the standard approach with needs adjustment, the refined approach does not result in substantial changes in income inequality. In Germany, Italy, Lithuania, Croatia, and Poland, we observe a further reduction in income inequality that exceeds 0.005. Only in Sweden income inequality is modestly higher under the refined approach, with increases between 0.015 relative to the standard approach. In Belgium and the Netherlands, the differences are negligible, remaining below 0.001.

Table 24: Income inequality by income concept with needs adjustment

Country	Inequality (gini)			
	Baseline	Deduct OOP	Add standard (EXTS)	Add refined (EXTR)
Belgium	0.2181	0.2328	0.1933	0.1932
Germany	0.2921	0.2933	0.2507	0.2401
Spain	0.3198	0.3289	0.2872	0.2850
Finland	0.2723	0.2817	0.2431	0.2421
France	0.2876	0.2954	0.2492	0.2480
Ireland	0.2821	0.2902	0.2448	0.2422
Italy	0.3085	0.3089	0.2784	0.2681
Lithuania	0.3364	0.3482	0.3125	0.3041
Netherlands	0.2411	0.2477	0.2159	0.2157
Poland	0.2558	0.2738	0.2313	0.2258
Portugal	0.3063	0.3238	0.2724	0.2690
Sweden	0.2482	0.2550	0.2130	0.2146
Croatia	0.2841	0.2896	0.2530	0.2440

Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023



6. Discussion and conclusion

Estimating the value of the in-kind benefits that households derive from the use of publicly-provided services is not a straightforward task, as is apparent from the literature on this topic. The three primary challenges relate to the way to (1) value the in-kind benefits for households; (2) allocate the benefits to individuals or households; and (3) account for differences in needs across individuals or households. In this paper we have focused on two categories of services that take up a central position within the SWINS-framework, notably ECEC and healthcare. We have explored how the incorporation of private contributions for these services affect their valuation and allocation drawing on different strands of literature. For the allocation of the in-kind benefits, we have used the actual consumption approach for ECEC and the insurance-value approach for healthcare. For the challenge of incorporating differences in needs we rely on the methodology of calculating a needs-adjusted equivalence scale as developed by Aaberge et al. (2010, 2017, 2024).

We start from the standard method of valuation, i.e. the cost of production approach, and refine it by taking into account private contributions paid by households when using the service, thereby taking two distinct tracks. In the first track, we argue that the total cost of a service equals the sum of state expenditures and private contributions, which is used to estimate the full-time equivalent value of ECEC services or to allocate healthcare spending through the insurance value framework. Deducting private contributions borne by individuals - calculated for ECEC and derived from the Household Budget Survey for healthcare - we obtain a net valuation of in-kind benefits rather than a gross valuation. This refinement offers a more precise representation of the in-kind resources households derive from public services and reveals the redistributive correction that can be created by income-dependent private contributions. In the second track, we draw inspiration from the literature on incorporating housing costs in living standard concepts, and we directly deduct these expenditures from households' disposable income. The implications on inequality and poverty of these approaches are empirically tested for both tracks.

In line with previous work (Marical et al., 2008; Verbist et al., 2012), our analysis underscores that integrating publicly provided services - either by extending the income concept or by deducting private contributions from disposable income – really matters when studying households' economic well-being. The magnitude of this effect, however, depends on the population groups that require these services. While healthcare services are needed throughout the life course, with demand increasing with age, the need for ECEC services is concentrated within a relatively small subpopulation. At the population level, the effect of healthcare services is already outspoken, while the impact of ECEC services on economic resources and redistributive outcomes is much smaller. Nonetheless, it unmistakably becomes important when the analysis for ECEC is restricted to the target group, i.e. households with young children.

Interestingly, we find that deducting private contributions has a larger impact on redistributive outcomes for healthcare services than for ECEC services, which follows from the larger size and coverage of healthcare services. The income-dependent character of private contributions is also apparent when incorporating these payments in the extended income concept that includes the value of public service. Incorporating private contributions into the valuation of public services reveals the social gradient embedded in these services through private contributions which remains concealed under the standard valuation approach.

The extent to which this gradient emerges, however, depends on the specific design of private contributions. In many countries, private contributions for both ECEC and healthcare services are income-based. As such, they introduce a form of vertical redistribution within the group of service users, transferring resources from higher-income to lower-income beneficiaries and resulting in a higher net in-kind valuation for the latter. This vertical redistribution is most clearly observed for ECEC services in Belgium, Finland, France, Italy, and Sweden when comparing the standard valuation approach with the refined approach. Nevertheless, the net in-kind value of ECEC services often still increases. An important factor that explains this result is the fact that

the use of ECEC services is skewed toward higher-income households in most countries: children from low-income families are less likely to be enrolled and tend to attend fewer hours, resulting in lower (or no) fees. This is only to a limited extent counteracted by the fact that in many countries, ECEC parental contributions are income-dependent, aiming to lower barriers of access for low-income households.

The inclusion of private contributions in the valuation of healthcare services similarly exposes the underlying social gradient, particularly in countries where private contributions are more strongly linked to income. As with ECEC services, however, the net in-kind value of healthcare does not necessarily exhibit a strictly negative relationship with income; instead, a reverse U-shaped pattern is observed in many countries. Several mechanisms may underpin this pattern. It partly reflects the demographic composition of the population, as older individuals typically consume more healthcare services. At the same time, higher healthcare needs among the elderly may coincide with higher private contributions. Moreover, as shown by Cruces et al. (2025), lower-income quintiles are more likely to report unmet medical needs due to financial constraints, often postponing or foregoing treatment. At the upper end of the income distribution, higher-income households may be more inclined to seek medical attention or specialist care, thereby increasing their private contributions. Under an actual-use valuation approach, this behaviour would translate into a higher derived value of healthcare services—an effect that cannot be captured by the insurance-value approach.

Although this study primarily considers three key challenges - namely, the allocation of services, valuation, and needs-based adjustment - the literature has also highlighted the importance of accounting for differences in quality and efficiency in the organisation of social services, as they may substantially affect their valuation (Verbist et al., 2012; Marical et al., 2008; Aaberge et al., 2024). Addressing these quality and efficiency differences, for instance, through the development of quality weights, is a much-needed avenue for future research. Another issue is that the current analysis in this paper does not account for within-country variation, which is particularly relevant in the provision of ECEC services. A more fine-grained within-country analysis, incorporating regional variation in private contributions to public services (in addition to efficiency differences) in the provision of public services, could uncover regional inequities which are not captured within the scope of this study.



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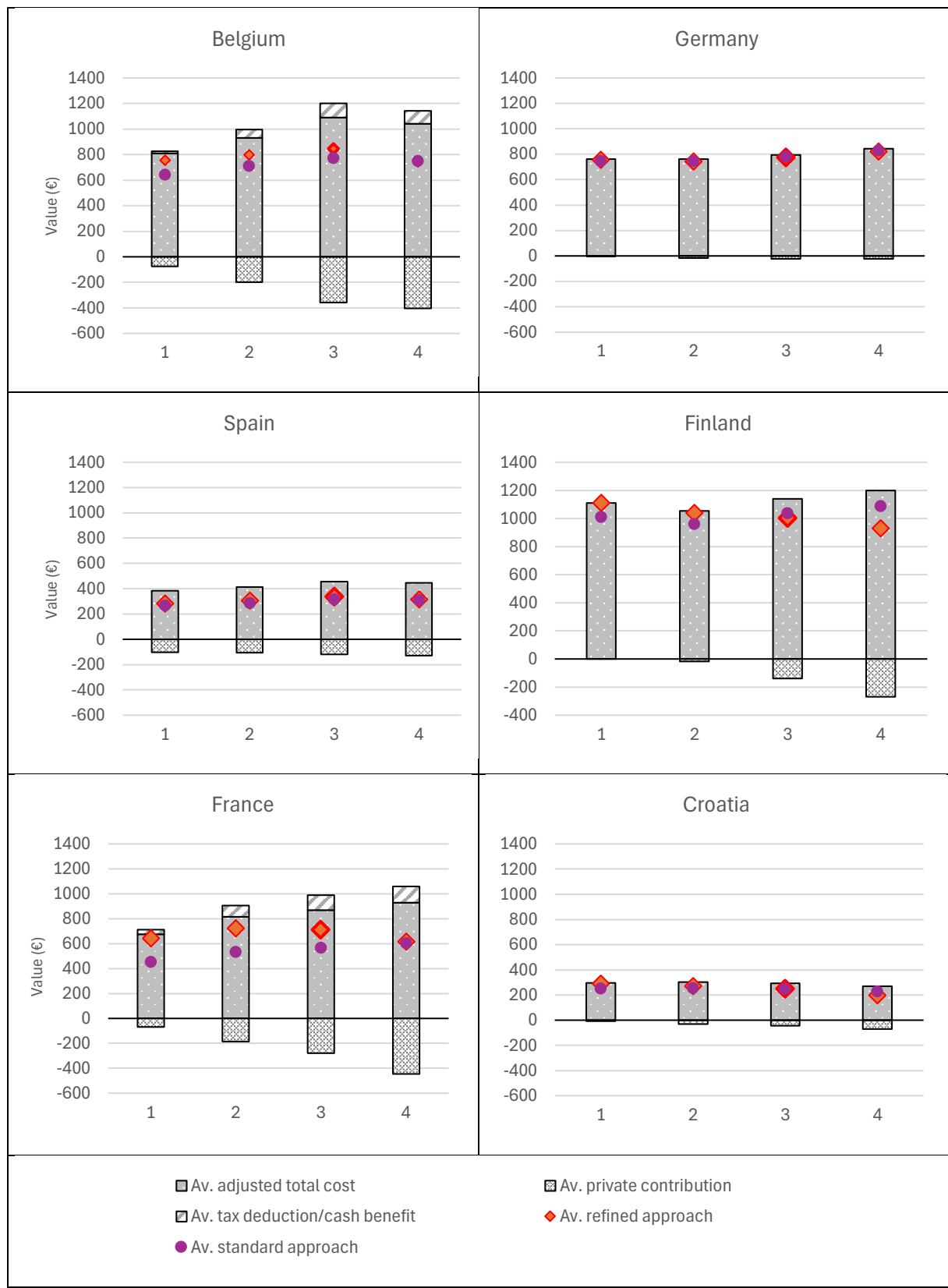
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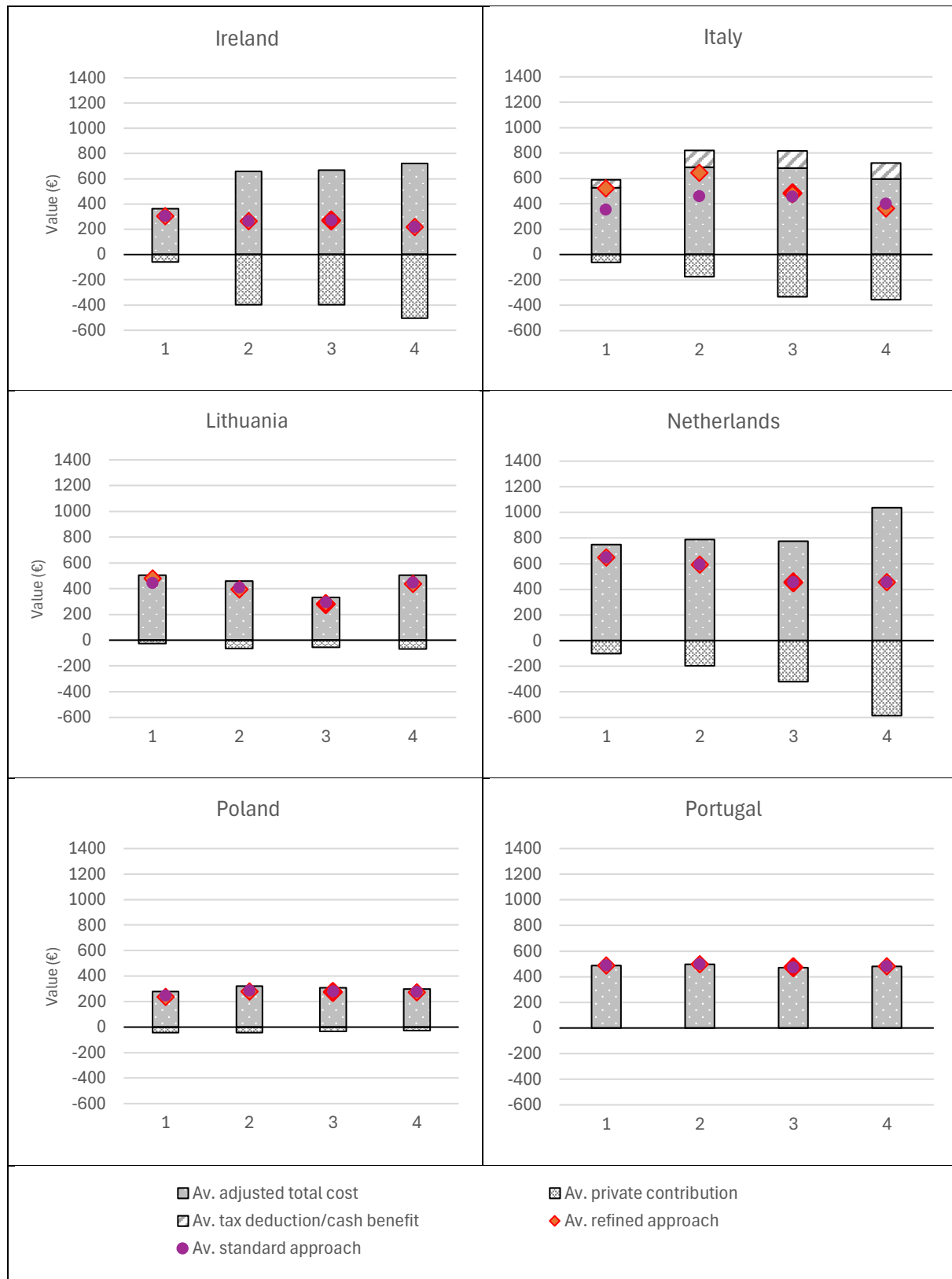
Appendix

Appendix 1: Distribution over quartiles of the value ECEC services for enrolled children under two years of age for 13 EU countries



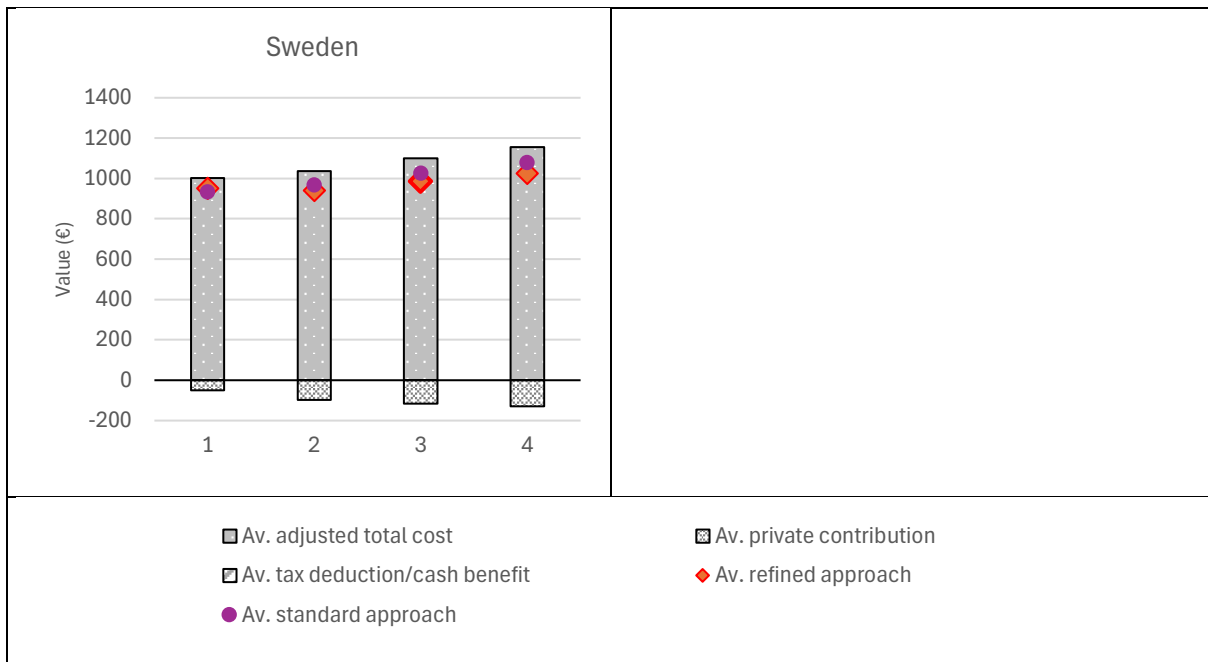
Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC
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Appendix 1 (bis): Distribution over quartiles of the value ECEC services for enrolled children under two years of age for 13 EU countries



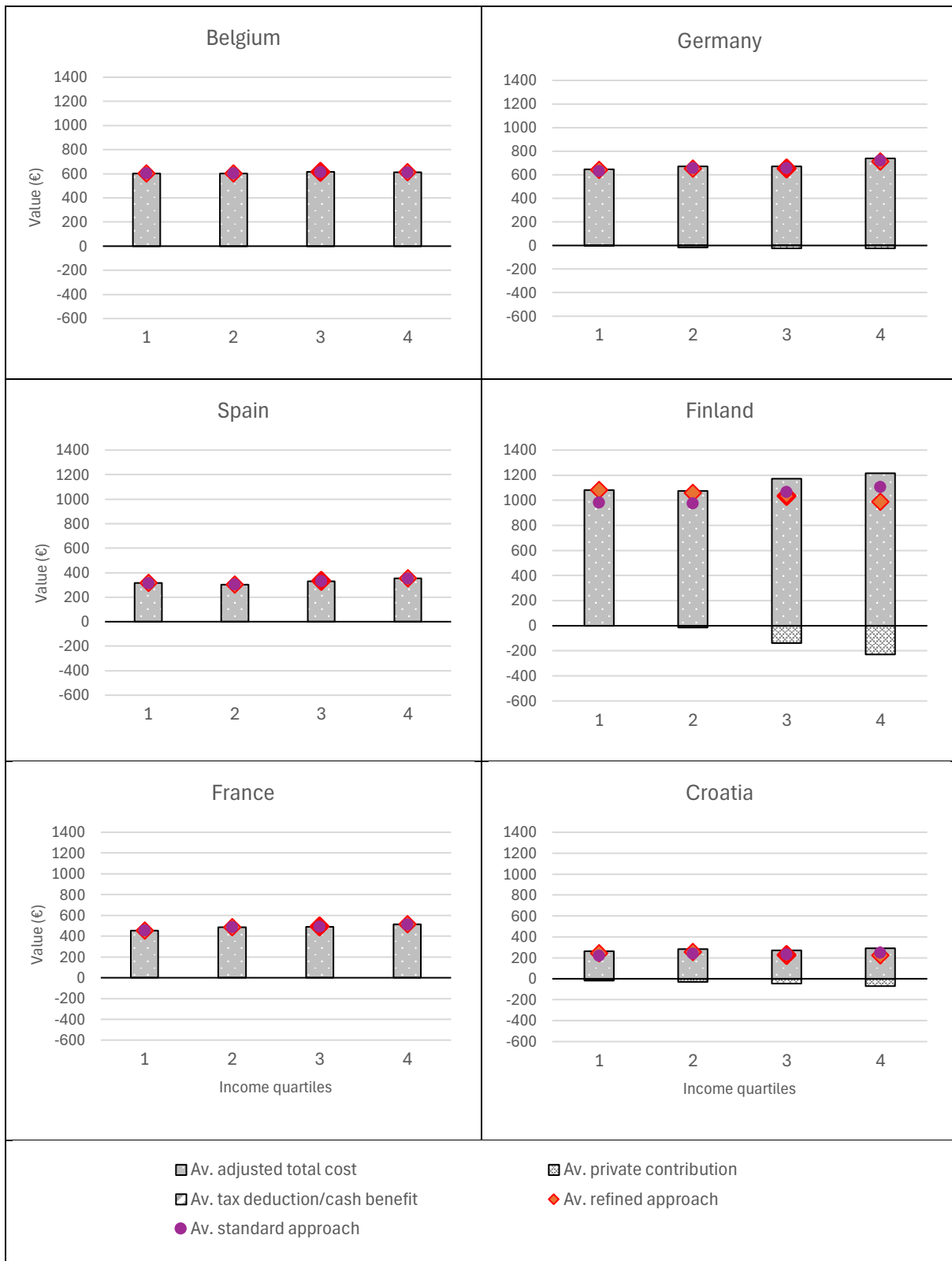
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Appendix 1 (bis): Distribution over quartiles of the value ECEC services for enrolled children under two years of age for 13 EU countries



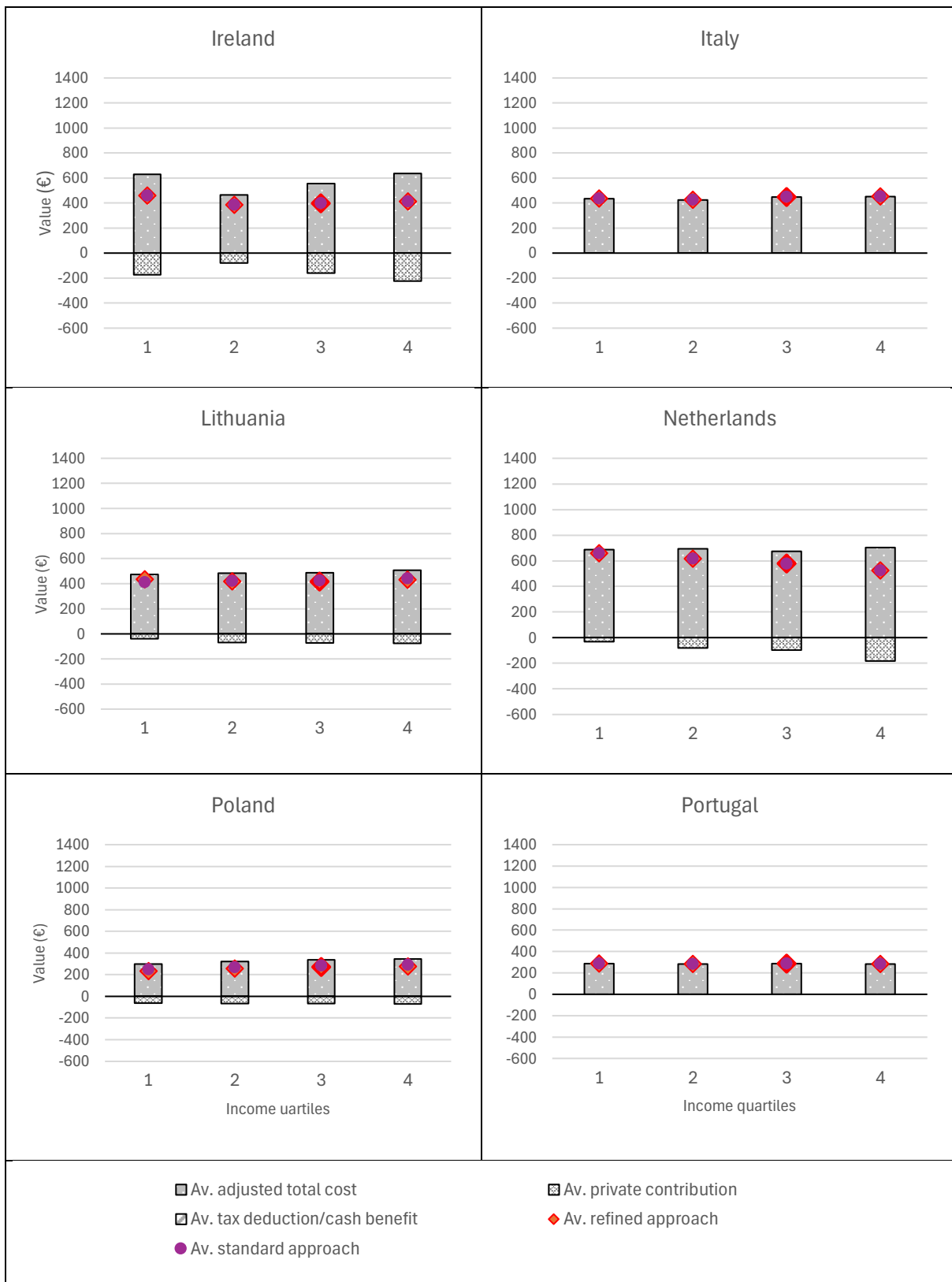
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Appendix 2: Distribution over quartiles of the value ECEC services for enrolled children from three to five years of age for 13 EU countries



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL)

Appendix 2 (bis): Distribution over quartiles of the value ECEC services for enrolled children from three to five years of age for 13 EU countries



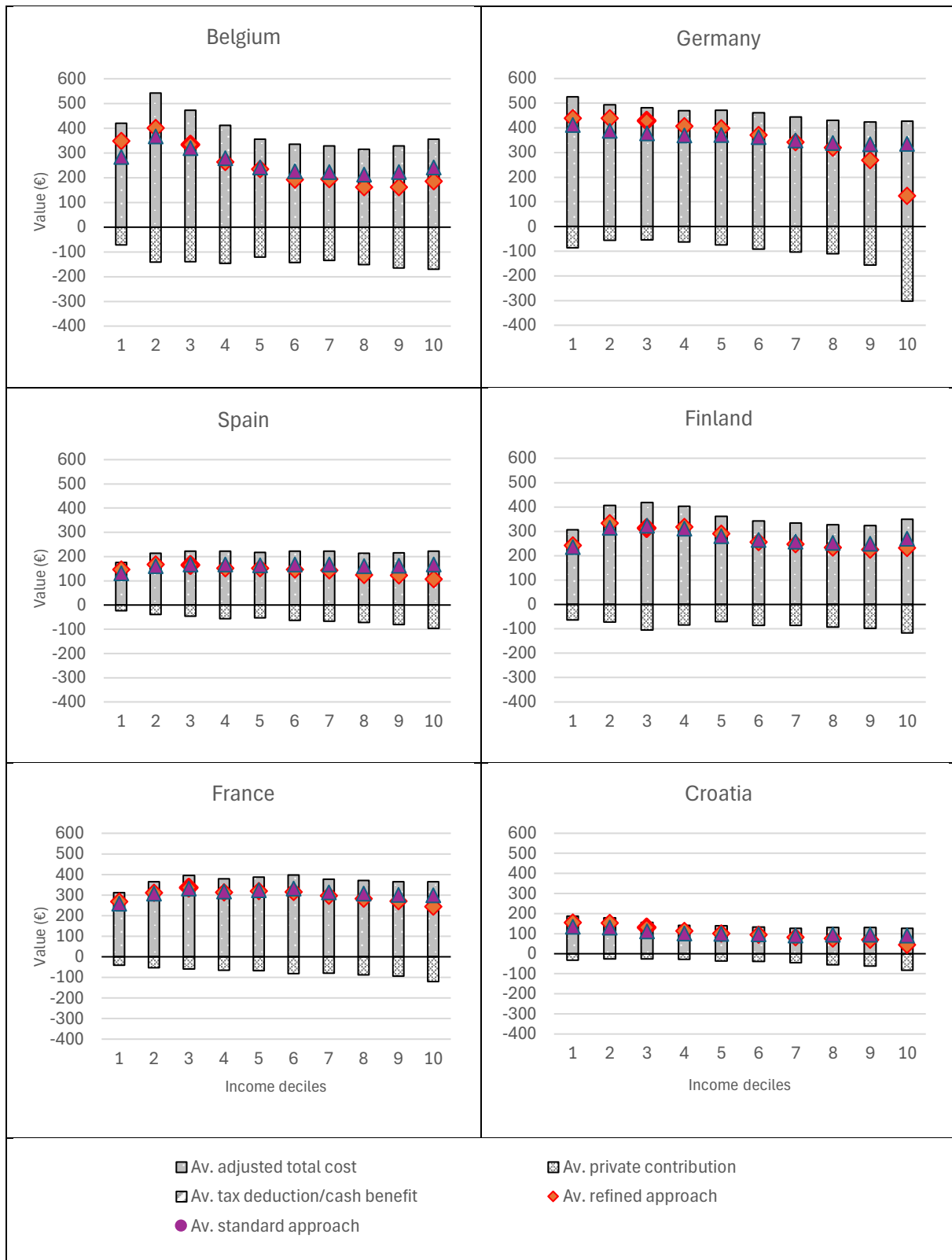
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Appendix 2 (bis): Distribution over quartiles of the value ECEC services for enrolled children from three to five years of age for 13 EU countries



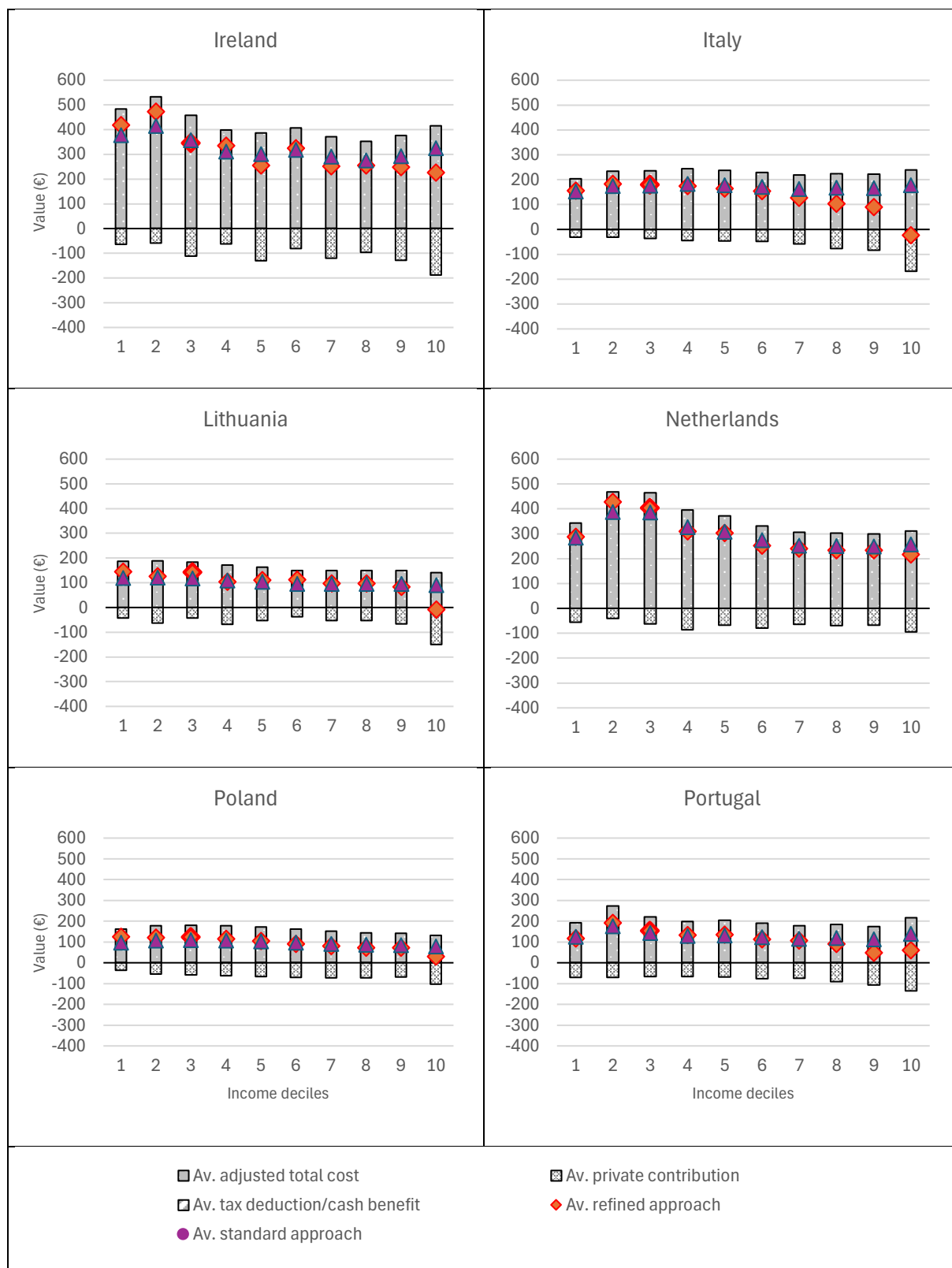
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Appendix 3: Distribution over deciles of the value of healthcare for 13 EU countries



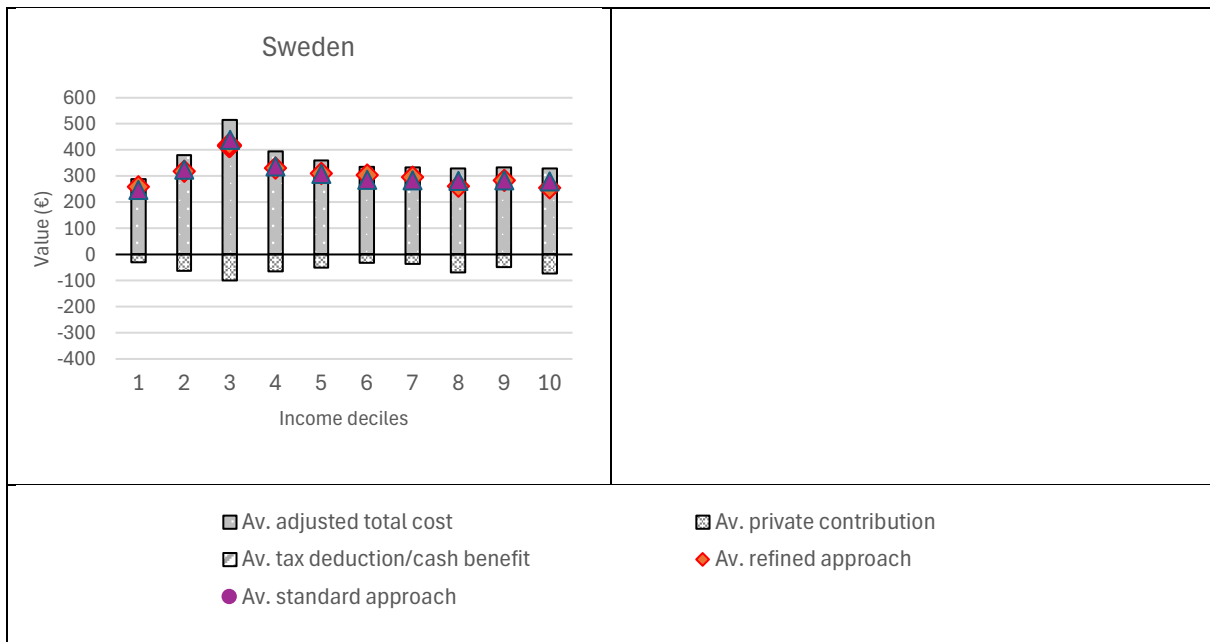
Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Appendix 3 (bis): Distribution over deciles of the value of healthcare for 13 EU countries



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

Appendix 3 (bis): Distribution over deciles of the value of healthcare for 13 EU countries



Source: Authors' calculations based on EUROMOD (J1.86+) and micro-data from EU-SILC 2022 (2021 in PL), HBS 2015, ECFIN age-gender health expenditure profiles 2022, System of Health Accounts 2023

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