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The Redistributive Capacity of Services in the EU

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GROWING INEQUALITIES' IMPACTS

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1. Introduction

Welfare states provide social benefits in cash and in kind. Cash benefits are income transfers, such as retirement pensions, family and unemployment benefits and social assistance. Benefits in kind are commodities directly transferred to recipients at zero or below-market prices (Barr 2012).

In Europe, benefits in kind are usually services, such as health, education, child care and care for the elderly. For example, hospital care in most countries is provided either free of charge or at near-zero prices (at the point of use). User fees are even rarer in the case of primary and secondary education: enrolment is compulsory up to a certain age, while tuition is provided free of charge to all children attending publicly funded schools, irrespective of family income. Moreover, child care is often heavily subsidised; kindergartens are run by the state (most commonly local governments) or government-supervised private organisations, while user fees, where applicable, are usually income-related (in the sense that higher-income families pay higher fees, while lower-income ones pay less or are fully exempted). Elderly care may also be available on similar terms; besides, several countries have developed long-term care insurance schemes, to cater for the future needs of an ageing population.

Benefits in kind in the form of goods (rather than services) are rather uncommon in Europe. Housing is a partial exception: in some countries council flats are allocated at subsidised rents (or free of charge) to eligible families. Nevertheless, in many countries rent subsidies and the direct provision of social housing have been phased out in favour of means-tested housing allowances in cash, except for emergency accommodation which remains available for selected groups in acute need (i.e. the homeless, refugees, victims of family abuse and so on). Furthermore, even though food parcels may be handed out by charities and soup kitchens may be organised by municipalities, these are sporadic, or are limited to emergencies, or cater for the needs of marginal groups such as the homeless.¹

The main sources of internationally comparable data on the size and composition of social expenditure are Eurostat and the OECD. In the European Union, although cash benefits constitute the lion's share of expenditure on social protection (which does not include education expenditures), the relative weight of benefits in kind is still significant: in 2007, approximately 38 per cent of all social expenditure involved benefits in kind, corresponding to 8.3 per cent of the combined GDP of the 21 member states included in this study² (Figure 1). The significance of services varies considerably between national welfare states. Their relative share was highest (around 50 per

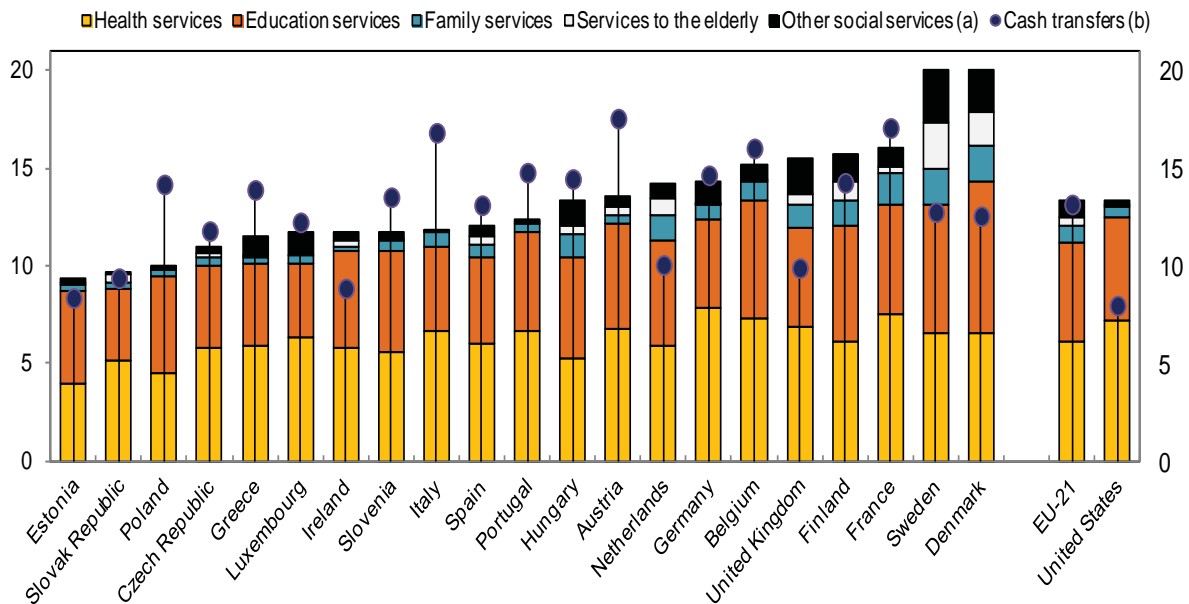
1 Outside Europe, the direct provision of food to the poor as a matter of course (i.e. not only in the case of famine relief and other emergencies) is still quite common in the USA and some Latin American countries (examples are Programa Apoyo Alimentario (PAL) in Mexico or Food Stamps programs in the USA).

2 The selection of countries is driven by data availability, see section 3.4.

cent) in Sweden, United Kingdom and Denmark, near average (33 per cent to 36 per cent) in Spain, France and Germany, and lowest (around 30 per cent) in Italy and Poland.

Even though consistent data going back in time are hard to find, the relative importance of benefits in kind seems to be on the increase (see also Cantillon forthcoming). Looking at the European Union of older member states (the EU-15), where a longer statistical series is available, spending on benefits in kind has gone up (from 8.1 per cent of GDP in 1998 to 9.2 per cent in 2008), while expenditure on cash benefits has lost ground (from 17.8 per cent to 16.8 per cent of GDP over the same period). As a result, the share of benefits in kind in all social spending has risen clearly, from 31.4 per cent in 1998 to 35.3 per cent in 2008 in the EU-15.

Figure 1. Public expenditure for in-kind and cash transfers, in percentage of GDP, 2007.



Note: countries are ranked in increasing order of total expenditure on all social services. 2005 data on education services for Greece and Luxembourg.

(a) Social services to the elderly, survivors, disabled persons, families, unemployed, as well as those in respect of housing and social assistance. (b) Cash transfers to the elderly, survivors, disabled persons, families, unemployed, as well as those in respect of social assistance.

Source: OECD (2011), data from OECD Social Expenditure database (www.oecd.org/els/social/expenditure) and OECD Education database (www.oecd.org/education/database).



Benefits in kind (like most social benefits) tend not to be means-tested, which may have consequences for their distributive impact. In terms of expenditure, a mere 15.2 per cent of benefits in kind were means-tested in 2008 in the EU-27 (slightly more as the 8.8 per cent of cash benefits). The relative significance of means-testing for benefits in kind has remained stable during the late 1990s, as data for the EU-15 show (15.7 per cent in 2008 compared to 16.2 per cent in 1998), while they slightly increased for cash benefits (9.1 per cent vs. 8.2 per cent over the same period). The share of means-testing in all benefits in kind varies greatly between countries. In the UK, Ireland and the Netherlands the proportion of benefits in kind that were means-tested was 21-22 per cent. At the other extreme, this proportion was much lower (around 3 to 4 per cent) in countries like Belgium, Sweden and Finland, and less than 2 per cent in Romania, the Czech Republic and Estonia.

Including education expenditures, which are an important in-kind benefit, tips the balance very slightly in favour of benefits in kind: 13.4 per cent of GDP in 2007 in the 21 EU countries included in this study (vs. 13.2 per cent of GDP for cash benefits, Figure 1). Spending on in-kind benefits exceeds that on cash benefits in all Nordic countries, as well as in United Kingdom, Ireland and the Netherlands. Sweden and Denmark top the league with over 18 per cent of GDP spent on benefits in kind. Education and health (at 5.1 and 6.1 per cent of GDP respectively on average in the EU) make up the bulk of in-kind benefits. Child care, services to the elderly and other services account between them for another 3.4 per cent of GDP. Compared to this EU average, the United States have similar spending on services, but their cash spending is much lower (Figure 1).

Given the increasing importance of services in social spending it is a natural question to try to gauge their distributional impact. We distinguish three questions. Firstly, do services reduce poverty and inequality, or is it true that they favour the rich more than the poor, as is sometimes asserted in the literature (Le Grand 1982)? Secondly, how do in-kind benefits from services compare to cash transfers in terms of redistributive impact? And thirdly, has the shift to services eroded the distributive power of the welfare state over time? This paper attempts to answer these questions by drawing on the latest estimates available and considering the major methodological issues. Its structure is as follows. After this introduction, section 2 reviews the literature on the rationale for in-kind benefits and their possible redistributive impact. Section 3 addresses the main methodological questions, presenting an alternative way of taking account of services-related needs in the equivalence scale. Section 4 presents the recent findings of analyses on the distributional impact of services, focusing on the first two questions. Section 5 concludes, in which we touch upon the third question.





2. Redistribution via In-Kind Provision

2.1. The Rationale for In-Kind Benefits

Services are particularly important in the ‘social investment state’ discourse, emphasising the role of ‘social protection as a productive factor’. This discourse stresses the contribution of health, education, long-term care and, crucially, child care to economic efficiency and higher living standards (associated with a healthier, better educated workforce), as well as to greater equality and lower poverty.³

The choice of in-kind vs. cash provision hinges on several considerations. In economics, the standard argument in favour of cash benefits is personal autonomy or ‘consumer sovereignty’, while a common justification for benefits in kind is paternalism and inter-dependent preferences (Curry and Gahvari 2008).

Under inter-dependent preferences, if the rich care for the material condition of the poor, a transfer from the former to the latter will leave both better off. However, it could be that the rich are not so much concerned with the welfare of the poor, or with their level of income, but rather with their consumption – and, specifically, with ‘good’ rather than ‘bad’ consumption on the part of the poor, as defined by the rich. Therefore, according to this view, from the point of view of tax payers, the provision of income transfers may be inferior to the provision of particular goods and services.⁴ Paternalism is strongly connected to the idea of merit goods and merit wants. Society may be concerned that certain goods should be available to all, or even that all should be forced to consume certain goods. Therefore, school attendance up to a certain age ought to be compulsory, rather than left to the individual preferences of children or their parents. In-kind provision is also supported by the related notion of ‘specific egalitarianism’. For instance, Tobin (1970) has argued that even those who do not object to income inequality *per se* may still want to see that all individuals receive adequate food, medical services or housing.

While paternalism and merit goods can go some way to explaining why governments provide health and education directly, rather than paying recipients cash benefits to enable them to buy as much health and education as they like, market failures (and, in particular, information failures such as moral hazard, adverse selection and so on) remain a more powerful explanation of in-kind provision (Barr 2012). In this light, the choice between benefits

3 The ‘Samaritan’s dilemma’, proposed by Buchanan (1975), may be thought of as the libertarian case for social investment. The argument goes along the lines of the Chinese proverb that it is better to teach someone how to fish than simply give them a fish. In Buchanan’s formulation, recipients have an incentive to remain poor if they are entitled to benefits as long as they are poor. Hence benefits should primarily be designed to discourage benefit dependency and eliminate moral hazard. The latter may arise when the availability of benefits (when poor) undermines the willingness of individuals to invest in human capital (so they avoid poverty). While the argument can be evoked to support cuts in social provision, it can and has been used to support the public provision of in-kind transfers, whether in the form of job training or social insurance (Coates 1995).

4 Sen’s approach (1993), redefining well-being in terms of capabilities like being able to read, write, remain healthy etc., can be seen as a more enlightened form of paternalism (cf. Deneulin 2002), justifying social investment in public services such as education and health.

in cash and benefits in kind to achieve equity objectives is constrained by considerations of efficiency. Specifically, when market allocation is efficient (e.g. in the case of food), equity objectives can be pursued via cash benefits that enable recipients to buy what they need at market prices. In contrast, when markets fail (e.g. in the case of health care) cash benefits cannot provide a solution, and equity objectives must be pursued via benefits in kind, such as publicly-funded health care and school education (see also Le Grand et al. 2008).

The focus on the universal provision of a comprehensive range of services (going far beyond health and education to include family services and active labour market policies) has always been a distinct feature of Nordic welfare states (Esping-Andersen 1990). As a matter of fact, choosing in-kind over cash benefits, even where these may seem interchangeable, has important implications for a number of issues. For instance, it can be argued that paying care allowances in cash (as in much of Continental Europe) favours private provision and reinforces traditional patterns of gender roles within the family, while the direct public provision of child and elderly care (as in Scandinavian countries) limits private sector involvement and promotes gender equality and stimulates labour supply (especially of mothers).

2.2. Dimensions of Redistribution

Most of the debate on the distributional impact of services concerns vertical redistribution (e.g. between individuals belonging to different income classes). However, it is worth considering that other dimensions may also be relevant. For instance, we may be simply interested in how resources are distributed between individuals with different needs, quite irrespective of their income. If ‘the key distributional question is [...] whether what people receive matches their needs’ (Hills 2004, 185), then surely the appropriate dimension is horizontal redistribution. Of course, the difficulty here is that ‘need’ for services is often not observed as such, or cannot easily be disentangled from use of services.

Furthermore, services tend by nature to be mostly used by individuals of particular age groups. For example, health care is more heavily used by the elderly and around birth, education is aimed for the young, child care for the very young (and their parents). In view of that, ‘a snapshot picture of redistribution may be misleading’ (Hills 2004, 185). The relevant dimension here is life cycle redistribution. This reminds us that the welfare state redistributes resources not just between different individuals, but also between different stages in the life of the same individual.



Again, problems of measurement and data availability abound, making the degree of life cycle redistribution hard to estimate. In spite of such difficulties, it has been estimated that, measured on a lifetime basis, in Britain, ‘nearly three-quarters of what the welfare state was doing in the late 1980s and early 1990s was more like a ‘savings bank’, and only a quarter was ‘Robin Hood’ redistribution between different people (Falkingham and Hills 1995, Hills 2004, Barr 2001).

2.3. Are Services Redistributive?

Benefits in kind are generally considered to be less redistributive than benefits in cash. In particular, their contribution in reducing poverty and inequality has been questioned, for instance by Le Grand (1982), who famously suggested that ‘Public expenditure on health care, education, housing and transport systematically favours the better off and thereby contributes to inequality in final income’ (p. 137). OECD (2008, 2011) evidence shows that net cash transfers reduce overall inequality by one third, whereas services reduce inequality only by one fifth.

Part of the difficulty in assessing whether and to what extent this is true lies in the fact that services actually affect the ‘primary’ distribution of incomes (i.e. before taxes and benefits) in a variety of ways, often subtle. For instance, child care and elderly care arguably promote equality through their effect on female employment – both by freeing up women from family responsibilities so as to pursue careers, and by providing women with job opportunities in the social services sector. In this sense, the ‘equalising’ effect of services goes beyond what a simple ‘pre-post comparison’ would indicate (Esping-Andersen and Myles 2009). A similar reasoning, however, also applies to cash benefits, especially if they are linked to activation.

Empirical work on the redistributive role of services has proliferated since the pioneering work of Smeeding (1977). In later work, Smeeding *et al.* (1993) examined the distributional impact of health, education and housing in seven European countries, while Evandrou *et al.* (1993) analysed the role of services in the British welfare state, and their effect on the distribution of incomes. More recently, Harding *et al.* (2006) compared the redistributive effect of cash and non-cash benefits in Australia and the UK. At about the same time Marical *et al.* (2008) provided estimates of the distributional impact of a range of publicly-provided services in OECD countries, an analysis that was updated and extended in terms of country coverage and categories of services in OECD (2011) and Verbist *et al.* (2012). Furthermore, Matsaganis and Verbist (2009) estimated the distributional effects of subsidies to publicly-

funded child care in Belgium, Finland, Germany, Greece and Sweden, while Paulus et al. (2010) estimated the size and incidence of education, health care and housing subsidies in Belgium, Germany, Greece, Italy and the UK.

Institutional design may be crucial in determining distributional impact. As Van Lancker & Ghysels (forthcoming) demonstrate, the distributional impact of services may be influenced by a number of factors (see also Van Lancker and Ghysels 2012). The study shows that in terms of equity the Swedish system of child care outperformed the Flemish one. In Flanders, greater use of child care by high-income groups and the generosity of tax deductions offset the pro-poor design of the tariff (parental fees) structure in public child care centres.

The question of redistributive effect is made complex by the fact that services are typically provided in response to greater need associated with the onset of some life event (from child birth to illness and frailty in old age). Ideally, the horizontal and vertical dimensions of redistribution ought to be identified separately. Controlling for need is one way of estimating the distributional impact of services (i.e. the degree of vertical redistribution) net of horizontal effects. Recently, a comprehensive analysis of Norwegian local public services (Aaberge et al. 2010) concluded that while non-cash benefits reduced poverty by almost one third and inequality by about 15 per cent, adjusting for differences in need offset a significant part of that impact. The different methodological challenges reflect the complexity of the topic and are the subject of the next section.



3. Methodological Issues

Estimating the distributional impact of services (or, indeed, cash benefits) raises the issue of the counterfactual. The European Commission routinely publishes estimates of poverty rates in the EU before social benefits (except pensions) and presents their distance from actual poverty rates (i.e. after social benefits) as a measure of national welfare states' effectiveness in reducing poverty. While informative, such an exercise explicitly relies on the *ceteris paribus* hypothesis. But other things are hardly ever equal: if social benefits had not existed, European societies would be completely different. The abolition of maternity, sickness and disability benefits, for instance, would oblige individuals to work more even when it was better for them that they did not. Simple pre-post comparisons, far from enabling us to draw safe conclusions on the capacity of welfare states to reduce poverty and inequality, thus need to be interpreted with caution.

For a range of reasons, the counterfactual problem is far more serious with respect to services. To start with, incomes in-kind (such as free health and education) are not included in standard definitions of income, and their value has to be computed separately in estimations of 'extended income'. On the other hand, as discussed earlier, services are often provided in response to greater need. For instance, over 90 per cent of all health expenditure for an individual occurs in the last year before death. In view of this, claiming that recipients had high 'extended incomes' as a result would miss an important part of the story: controlling for needs becomes necessary. Furthermore, the welfare state not only affects net disposable incomes (i.e. after redistribution through income taxes and social benefits), but also shapes market incomes (e.g. gross earnings before taxes and benefits). For example, service-intensive Nordic welfare states have defamiliarized welfare responsibilities with regard to caring for children and the elderly, as a result of which employment rates are virtually identical for men and women. As a consequence, child poverty in Nordic countries is low even before social benefits are taken into account. Ignoring these indirect effects of publicly-provided social services on the distribution of market incomes risks seriously under-estimating their real distributional impact.

In this section, we discuss the major methodological issues related to including the value of public social services in a distributional analysis (see also e.g. Aaberge et al. 2010; Garfinkel et al. 2006; Marical et al. 2008; OECD 2011; Verbist et al. 2012). How should one value the benefits households derive from public social services (valuation)? How should we distribute the aggregate value of these services among individuals (allocation)? How should the equivalence scale be adapted to take account of the needs associated with these services (equivalence scales)? Each of these issues has consequences for the counterfactual against which to measure the distributive effect of these services.

3.1. Valuation

The valuation of public services is a particularly difficult issue, as these services are provided outside market settings, and hence there is no market price valuation. In the literature, the standard practice is to value the benefit deriving from public services at their production cost, which means that its measurement is based on the inputs used to provide these services rather than on the actual outputs produced (see e.g. Aaberge *et al.* 2006; Marical *et al.* 2008; Smeeding *et al.* 1993). A first drawback of this approach is that it does not take account of the quality and efficiency in the provision of these services. Both total and public health care spending is for instance much higher in the United States than in any EU country. This corresponds to very high quality care in some areas (e.g. cancer care), but not necessarily in others, such as primary care, in which many other countries (e.g. United Kingdom) perform better (Pearson, 2009). Moreover, US standard health indicators in general are not always better than in many European countries (Anderson *et al.* 2003; Garfinkel *et al.* 2006). Within the national accounts framework, attempts have been undertaken to develop output-based measures, which precisely try to capture (changes in) quality. Deveci *et al.* (2008) find for instance that output-based production of health services grew more rapidly than input-based production. Another problem of using the production cost is that it does not necessarily reflect the user's value of the service, as the public service cannot (easily) be exchanged for other goods. Therefore, economists often assume that in-kind benefits are worth less to recipients than their equivalent in cash (Smeeding 1977; Nolan and Russell 2001; Garfinkel *et al.* 2006; Barr 2012).

3.2. Allocation

The second question relates to the allocation of these benefits across individuals: who are the beneficiaries to whom the value of public services is attributed? The literature distinguishes two approaches, namely the 'actual consumption approach' and the 'insurance value approach' (see e.g. Marical *et al.* 2008). The actual consumption approach allocates the value of public services to the individuals that are actually using the service; it can of course only be applied if actual beneficiaries can be identified. This approach is typically used in the case of education services (Antoninis and Tsakloglou 2001; Callan *et al.* 2008), childcare services (Matsaganis and Verbist 2009; Vaalavuo 2011; Van Lancker and Ghysels forthcoming) and social housing (OECD 2011; Verbist *et al.* 2012).

The actual consumption approach has also been used for public health care services, based on detailed data on the effective use of health care services by individuals (see e.g. for the UK Evandrou *et al.* (1993) and Sefton (2002)). Several authors, however, point out that this approach states that it ignores the greater needs that are associated with being ill: it implies that, *ceteris paribus*, sick people are better off than healthy people because they



receive more health care services (see e.g. Aaberge et al. 2006). Therefore, many studies use an insurance value approach, which means that one imputes the ‘insurance value’ of coverage to each person based on specific characteristics (such as age, sex, socio-economic position). 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 (i.c. the government) would have just enough revenue to cover all claims for such persons (Smeeding 1982). It is based on the notion 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, such as age (Marical et al. 2008). The insurance value approach also incorporates the value of access to this type of services.⁵ Both approaches can lead to quite different results. Marical et al. (2008) have applied the insurance value and the actual consumption approach for health care services in eight European countries. On average, the reduction in inequality when including health care expenditures in the income concept turned out to be considerably lower on the basis of the actual consumption approach than with the insurance-value approach.⁶

3.3. Correction for Needs: Equivalences Scales

As the needs of a household grow with each additional member in a non-proportional way, equivalence scales are commonly used in distribution analyses to take account of such economies of scale (OECD 2005). In Cantillon and Vandembroucke (forthcoming) (as in many recent publications) the equivalence scale used for adjusting household disposable income is the so-called OECD modified equivalence scale.⁷ But as some types of non-cash income may have needs associated with them that are unmeasured in usual equivalence scales, using a cash income equivalence scale when non-cash income components are included in the income concept, may give rise to what Radner (1997) has called the ‘consistency’ problem. Consider two single-person households with each EUR 1000 cash income. Person A is ill and receives public health care worth EUR 200, whereas person B is healthy and needs

5 A more pragmatic reason for using the insurance value approach is that most datasets used in distributional analysis (e.g. EU-SILC) do not contain information on effective use of health care services.

6 This rather surprising outcome is largely due to the effect of re-ranking. As part of the expenditures (notably those on in-hospital care) are concentrated among a very small group, this may lead more easily to re-ranking of individual beneficiaries, which dampens the equalizing effects of health care services (5 per cent of the population in the survey data accounted for more than 90 per cent of the nights spent in hospital, whereas out-of-hospital care was more widespread over the population; see Marical et al. 2008 for more details).

7 This scale assigns a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child. See OECD (2005) (<http://www.oecd.org/dataoecd/61/52/35411111.pdf>) for further explanations and specifications. This is a pragmatic equivalence scale, which takes into account only differences in household size.

no health care. Consequently, person A could be said to have 20 per cent more needs than B because of differences in health care needs, and his equivalence scale should be 1.2 compared to 1 for B.

Despite recognition of this issue in the literature, most empirical studies still apply the same (cash income) equivalence scale for both cash and extended income. Garfinkel *et al.* (2006) defend this approach because ‘on the one hand, in-kind benefits do not exhibit economies of scale, which implies they should be divided by household size rather than the square of the household size. On the other hand, in-kind benefits are not shared equally by all family members, which suggests that they should be added to equivalent cash income on an individual basis. (...) Thus our use of the same equivalence scale for both cash and in-kind expenditures is a reasonable middle-of-the-road solution’. However, this reasoning neglects the fact that health care or education related needs do not only depend on economies of scales as captured by a standard cash income equivalence scale. This issue is tackled in Paulus *et al.* (2010), whose basic point of departure is that the equivalence scale used to measure inequality of disposable income is conditional on the existence of free public services such as education and health care. They propose a fixed cost approach, ‘assuming 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 health care depict accurately the corresponding needs of these groups. Then the recalculation of equivalence scales is straightforward.’ They propose the following formula, which should be valid for a household to remain at the same welfare level before and after including public services in the income concept:

$$(1) \quad y/e = (y + k) / e'$$

with y being cash disposable income, e the modified OECD equivalence scale, k the value of public services and e' the new equivalence scale which incorporates the extra needs of the household members for public services. Hence, $(y+k)/e'$ can be considered as the income concept which incorporates both the in-kind benefit from services, as well as the corresponding needs for these services.

This formula can be rewritten as

$$(2) \quad e' = (y + k) e / y$$

meaning that for all households (with y different from zero) the new equivalence scale can be derived. Note that this scale is income-dependent, as its value decreases with income level. The value of k differs across countries, and can reflect differences in social priorities. Paulus *et al.* (2010) calculate this adjusted equivalence scale using EU average values to calculate k (see further), and then calculate how this impacts on inequality measures.



They actually do not really calculate the redistributive effect of services, but they basically test the sensitivity of inequality outcomes for differences in relative spending levels on services across countries.

In order to measure the distributive impact of services, an extra step needs to be introduced, which is the track followed in this paper. We start from formula (1) and decompose it into two steps, thus developing a service-needs-adjusted counterfactual for measuring the redistributive effect of public services. Firstly, it shows the effect of including the needs for the services (e.g. health care) in the equivalence scale by moving from y/e to y/e' . As e' is an equivalence scale that incorporates a measure for health care needs, y/e' can be considered as an indicator of the living standard that would be if there would be no publicly provided health care services. As cash equivalent income is conditional upon the existence of publicly provided services, y/e' is a way of removing this conditionality. Consequently, y/e' can be used as a counterfactual against which to measure the redistributive impact of services, which is represented by the transition from y/e' to $(y+k)/e'$.

The demarcation of needs (of the target groups, see Aaberge *et al.* 2010) requires careful consideration, and might differ according to type of service. In the case of health care and compulsory education, it can be argued that all individuals have a need for health care, and that all pupils at compulsory school age have a need for education (which is one of the reasons why it is compulsory, Callan and Keane 2009). In the case of other services this issue is more debatable: does the use of childcare correspond to a need (and thus requires an adaption of the equivalence scale), or is it more a reflection of preferences (thus not requiring a modification of the equivalence scale)? We come back on this issue in section 3.4.

The level of needs is calculated as the average spending per individual in target group i for the respective services per individual in this target group (*i.e.* age group).⁸ The value of k is calculated for each age group using a correction in spending levels (as a share of spending per age group per service in GDP per capita) towards the EU-level based on the formula presented in Paulus *et al.* (2010):

$$(3) \quad k = \sum_{i=1}^n (k_{ENi} * \frac{S_{EEUi}}{S_{ENi}} + k_{HNI} * \frac{S_{HEUi}}{S_{HNI}} + k_{ECNi} * \frac{S_{CEUi}}{S_{CNI}})$$

With $k_{ENi, k_{HNI}, k_{ECNi}}$ being the country's spending for respectively public education, health care and ECEC for persons with characteristics i ; $SENi, SHNi, SCNi$, being the country's spending figures for the different types of services expressed as a share of national GDP per capita and $SEEUi, SHEUi, SCEUi$ being the corresponding EU averages. The new equivalence scale e' of formula (2) is then recalculated for all households using the new value of k , which reflects EU averages of spending.

⁸ This means that higher spending levels (either due to high use of the services or high expenditures per user) result in higher corresponding needs (and vice versa). Thus a higher level of spending corresponds to a higher recognition of needs. Remember that, as already indicated in section 3.1, differences in efficiency or quality of services cannot be accounted for in this analysis.



3.4. Data and Implementation

In our empirical analysis we build on the work presented in OECD (2011) and Verbist *et al.* (2012), focusing on three major categories of services, namely health care, education (with separate results for compulsory and tertiary education) and early childhood education and childcare (ECEC). The underlying database is EU-SILC 2007. We present results for 21 EU countries.⁹

For allocating public education expenditures over the population, we use the actual consumption approach. EU-SILC provides current participation in education for individuals of 16 years and older, distinguishing six ISCED levels (pre-primary, primary, lower secondary, upper secondary, post-secondary non-tertiary, tertiary).¹⁰ As this information is not available for individuals younger than 16 we have imputed education levels for this group using enrolment rates per education level and age reported in OECD Education Database. This data source also provides us the average amount of public spending on education per year per pupil/student for the different education levels. These amounts are allocated to pupils/students participating in the corresponding education level.

For health care we have applied the insurance value approach¹¹ using the health care age profiles as published by the European Commission (2009) to derive public health care spending per age group. Note that these age profiles only consider differences in age and gender, the approach might underestimate the equalizing effect of public health care services in countries where elements of the system are targeted towards low-income groups (e.g. in the form of reduced out-of-pocket payments). On the other hand, as research has indicated that poorer people have in general worse health conditions, and consequently greater needs for health care (see e.g. Hernandez-Quevedo *et al.* 2006), the results may overestimate the distributive impact if these needs remain unmet.

Beneficiaries of early childhood education and childcare are identified in EU-SILC on the basis of their participation (number of hours) in either pre-school education or day-care centres. The amounts for the imputation come on the hand from the OECD Education Database for pre-primary education and on the other from various national sources for childcare facilities (see Verbist *et al.* (2012) for an overview). The imputations are based on number of hours of reported use, thus incorporating intensity of use. A limitation is that EU-SILC does not differentiate between the use of private and public child care. By treating all child care as ‘public’, our results will overstate the number of recipients of public subsidies and understate the value of such subsidies per user. However, the result-

9 Bulgaria, Malta and Romania are not included in EU-SILC 2007. Cyprus, Lithuania and Latvia are not included in the analysis as for these three countries we do not have estimates for the value of ECEC. Moreover, their amounts for tertiary education include expenditures on research and development, reducing comparability with other countries.

10 Note that EU-SILC does not allow us to distinguish between participation in publicly or privately funded education institutions, not between general and technical secondary education, not between Type A and Type B tertiary education. For tertiary education, amounts exclude direct expenditures for research and development activities.

11 This approach is defensible for EU-countries, where public health care coverage is quasi-universal in most countries.



ing bias may in practice be rather limited, as most ECEC is in fact school pre-primary education, which tends to be overwhelmingly publicly-funded.¹²

With respect to the choice of equivalence scale, the cash income equivalence scale is the modified OECD scale, which is the starting point for constructing the services needs adjusted equivalence scale. For this adjustment for needs related to services, we first have to specify the target groups for which we assume that there are corresponding needs (see also Aaberge *et al.* 2010). For health care, all individuals have needs, the size of which differs with age and gender (in line with the health care age profiles used for the imputation).¹³ For education, we assume that all individuals in the age bracket of 6-16 year have education needs (this corresponds for most European countries with compulsory education),¹⁴ which is in line with the approach in Paulus *et al.* (2010). However, given increased participation in higher education and increased demand for a better educated workforce, it can also be argued that education needs extend to a higher age group. Therefore, we use the age group 6-22 as corresponding to education needs. For ECEC a similar reasoning can be applied: given the importance attached to childcare (see also Lisbon targets), one can assume that childcare use is increasingly recognized as a need. Therefore, we include in the equivalence scale also needs for ECEC. For each target group (based on aged), we calculate a value for k , which is then averaged over the EU.

12 In some of these countries (Denmark, Germany and Sweden), the distinction between day care and pre-primary education in EU-SILC is probably erroneous: the number of children in the former is probably overestimated, while that in the latter is underestimated (when comparing with enrolment rates in pre-primary education in the OECD Education Database). In most countries where childcare is more frequently used, day care centres tend to be heavily subsidised.

13 Unfortunately, there is no information available that would allow us to differentiate according to other parameters such as socio-economic background.

14 The starting age of compulsory education is 6 in most countries, whereas some countries start earlier at age 5 (Hungary, the Netherlands and the United Kingdom), and others at age 7 (Denmark, Estonia, Finland, Poland and Sweden) (see OECD, Education at a Glance 2010). The ending age of compulsory education varies between 14 and 18 years in Europe. 90 per cent of the population are enrolled in education for at least 13 years, ranging from 11 (e.g. Greece) to 15 years (Belgium, France, Norway and Sweden).





4. The Distributive Impact of Services

In order to show the distributive impact of public services we first present the size and the incidence of these services measured against cash disposable income equivalised with the modified OECD scale. This shows the relationship between the in-kind benefit of services and the indicator of living standards commonly used in distribution analyses. In a next step, we adjust this living standard concept by incorporating the needs for services in the equivalence scale, as well as the value of these services in the income concept. We then use this adjusted measure of living standards to test the inequality and poverty effect of incorporating services both in the income concept and in the equivalence scale. In order to present an indicator of the distributive characteristics of the various policy instruments that is independent of their size, we finally calculate concentration coefficients. As the social investment strategy is oriented towards the working-age population, we focus here on benefits targeted at non-elderly individuals (this means that health care expenditures allocated to individuals 65+ are not included and that cash transfers do not include pensions).

4.1. Size and Incidence of Services

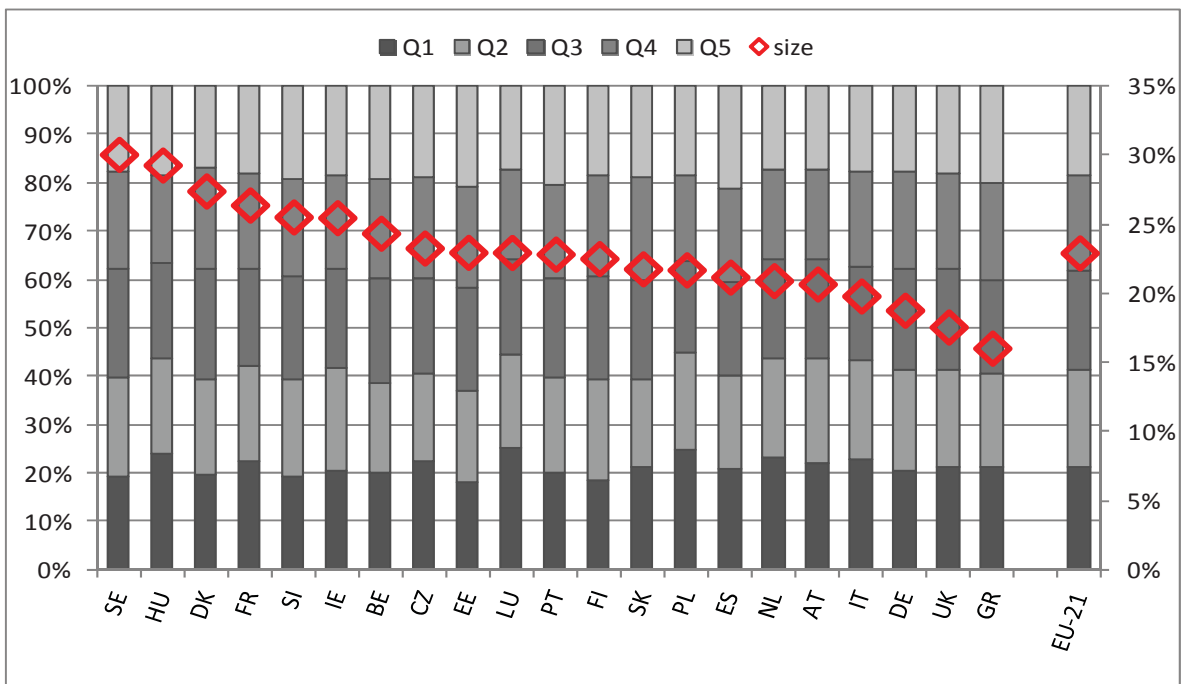
Figure 2a presents the value of total in-kind benefits for working-age individuals as a share of disposable income, as well as the distribution over cash income quintiles. With on average 23 per cent of disposable income, these services are important for living standards, and even more important than cash transfers (excluding pensions), which account for 10 per cent of disposable income (see Figure 2b). For services, the size ranges from 16 per cent of disposable income in Greece to 30 per cent in Sweden. For cash transfers, Greece reports again the lowest size (3 per cent) and Hungary has the highest score with 15 per cent.

The distributive pattern of services over the cash income quintile distribution is remarkably equal. In most countries, the share of the bottom quintile in total services is around 20 per cent, with slightly more pro-poorness in Poland and Luxembourg (around 25 per cent). The distributive pattern of cash transfers (excluding pensions) is in general somewhat more oriented towards lower incomes than that of services: on average 26 per cent of the total mass of cash transfers goes to the bottom quintile, whereas the top quintile has a share of only 15 per cent.

This is most pronounced in the Netherlands (with 35 per cent going to the bottom quintile) and absent in Spain and Italy (15 per cent for Q1).

Let us now look into the size and distribution of four types of services, namely health care, compulsory education, tertiary education and ECEC.¹⁵ Health care (excluding expenditures going to the elderly) is the most important type, with on average a share in disposable income of almost 10 per cent (Figure 2c). The size is lowest in Greece (7 per cent) and highest in France (12 per cent). On average, the share going to the bottom quintile is slightly below 20 per cent, and this is the case in almost all countries (with Poland and Luxembourg as only exceptions with a share of 20 per cent).

Figure 2a. Size (% of dpi, rh axis) and distribution of in-kind benefits (non-elderly only) over dpi quintiles



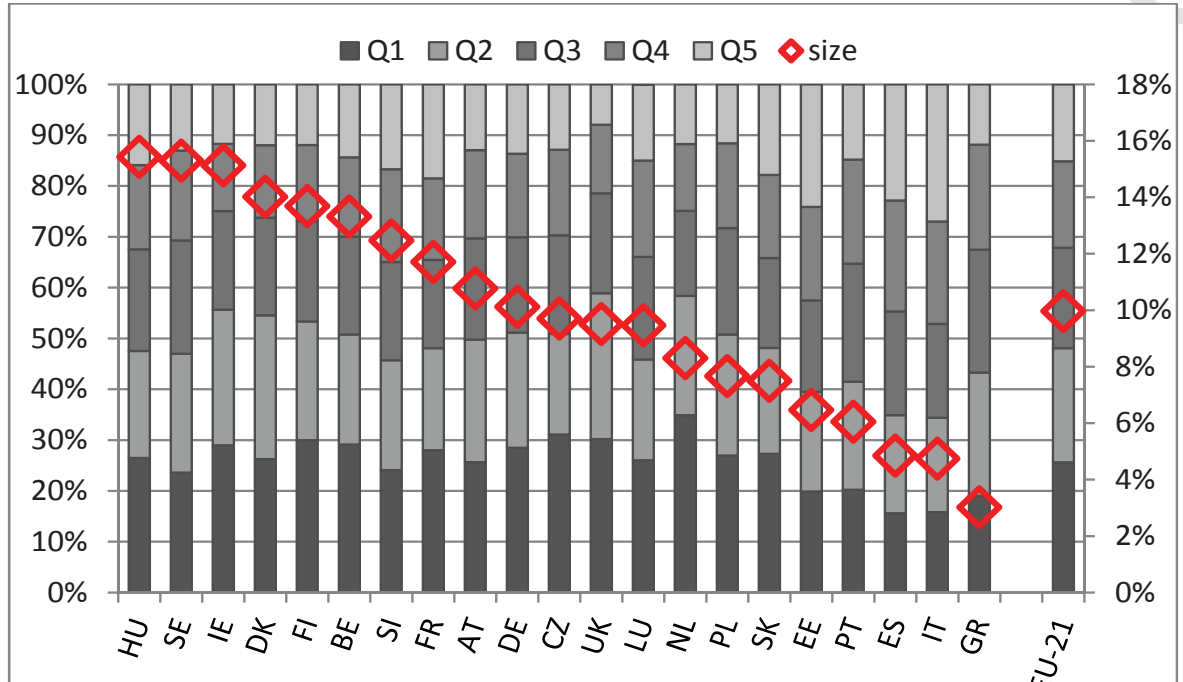
Notes: Countries are ranked in decreasing order by share of benefits in disposable income. Dpi=disposable cash income (equivalence scale=modified oecd-scale).

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

15 These four categories do not sum up to the total presented in Figure 6-2a, which includes also non-tertiary education outside the age category 6-16.



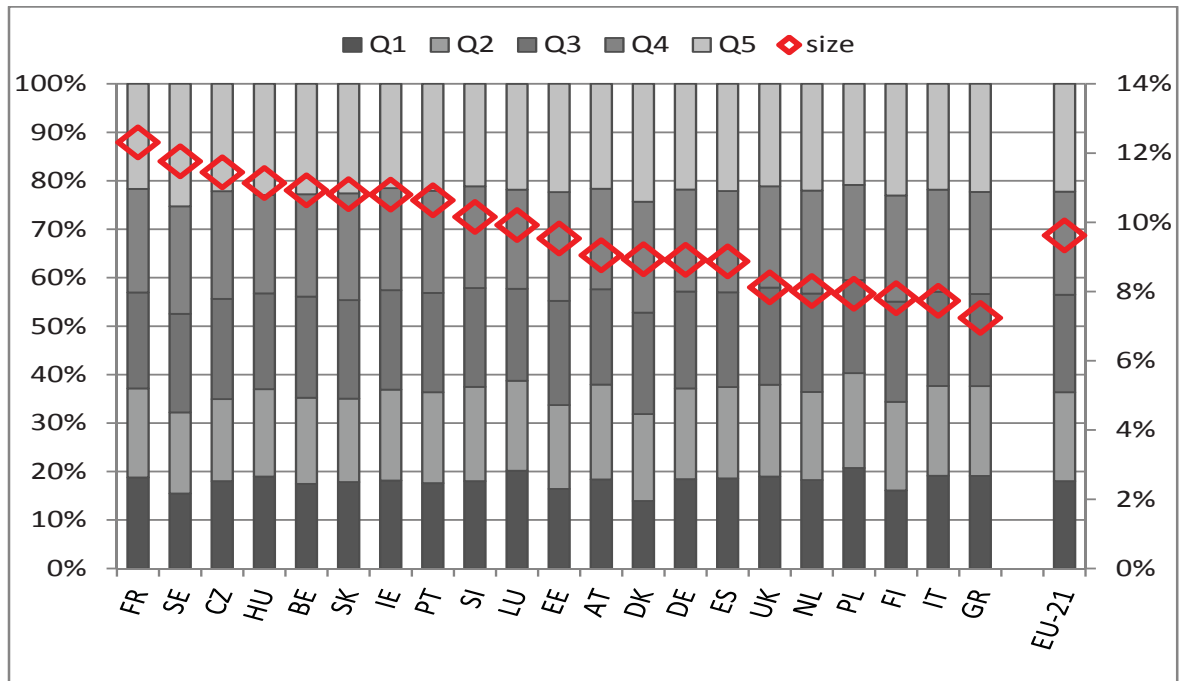
Figure 2b. Size (% of dpi, rh axis) and distribution of cash benefits (excl. pensions) over dpi quintiles



Notes: Countries are ranked in decreasing order by share of benefits in disposable income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

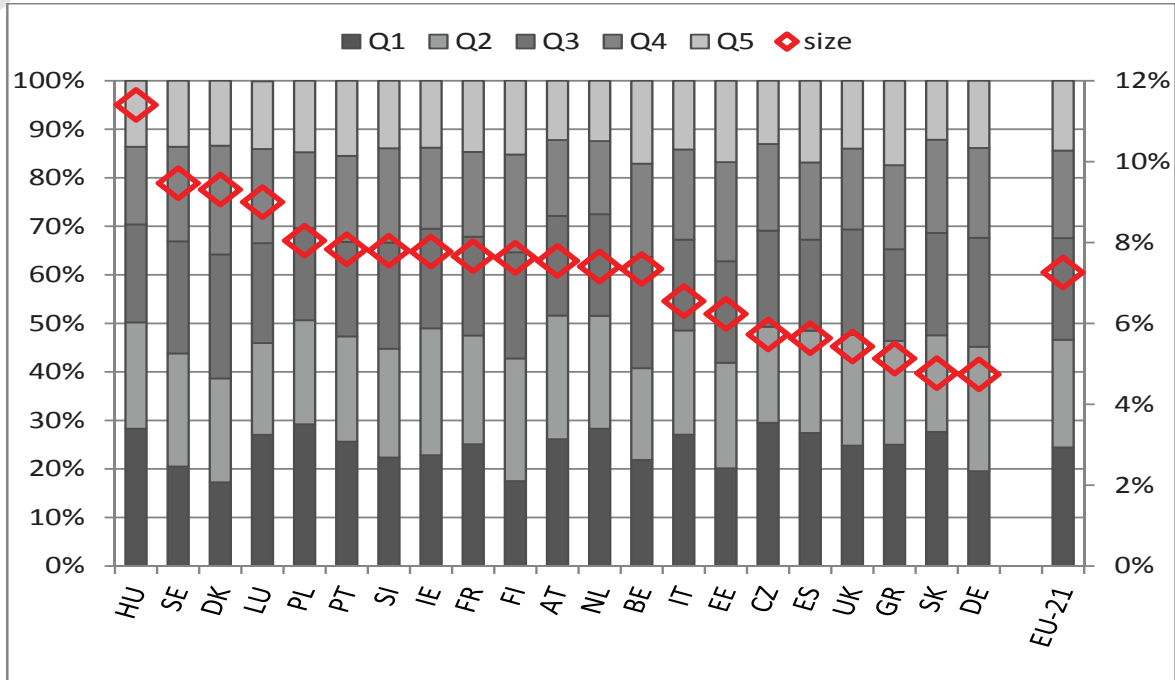
Figure 2c. Size (% of dpi, rh axis) and distribution of health care in-kind benefits (non-elderly only) over dpi quintiles



Notes: Countries are ranked in decreasing order by share of benefits in disposable income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

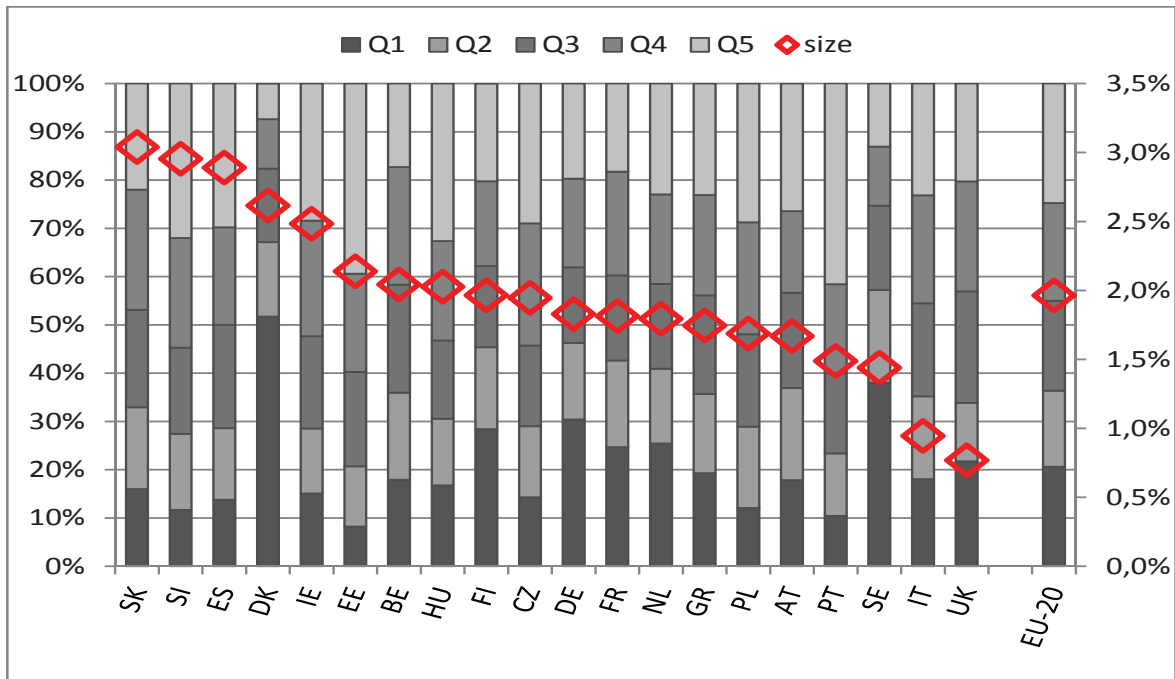
Figure 2d. Size (% of dpi, rh axis) and distribution of compulsory education in-kind benefits over dpi quintiles.



Notes: Countries are ranked in decreasing order by share of benefits in disposable income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

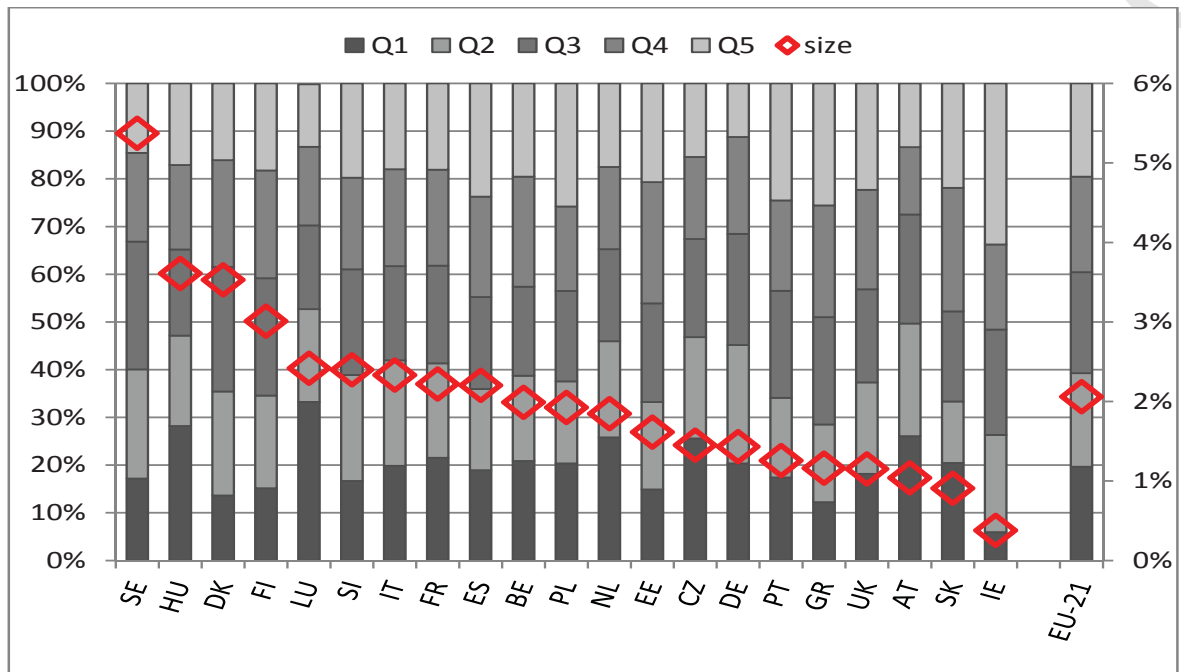
Figure 2e. Size (% of dpi, rh axis) and distribution of tertiary education in-kind benefits over dpi quintiles.



Notes: Countries are ranked in decreasing order by share of benefits in disposable income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

Figure 2f. Size (% of dpi, rh axis) and distribution of ECEC in-kind benefits over dpi quintiles.



Notes: Countries are ranked in decreasing order by share of benefits in disposable income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

Figure 2d gives the distribution over income quintiles of public education expenditures targeted at 6-16 year old pupils, which corresponds in most countries to compulsory education. After health care this is the second most important component of services (on average 7 per cent of disposable income, with low values in Germany and the Slovak Republic (almost 5 per cent) and a high value of 11 per cent in Hungary). Compulsory education is more oriented towards low incomes: on EU average, the bottom quintile receives 24 per cent of expenditures of this education category, whereas it is only 14 per cent for the top quintile. This pattern is strongest in the Czech Republic and Poland (with a Q1 share of almost 30 per cent), and then decreases gradually over the countries towards 20 per cent. In only three countries the bottom quintile share is below 20 per cent (in Finland, Denmark and Germany). The general progressive pattern elsewhere is driven by the fact that children in compulsory education tend to be situated more in the lower parts of the income distribution, which is far less the case in these three countries.

The pattern of tertiary education is quite different from that of compulsory education. With on average 2 per cent of disposable income, its size is much lower (ranging from 1 per cent (UK and Italy) to 3 per cent (Slovak Republic and Slovenia), Figure 2e). The EU-average appears to indicate a rather even spread of tertiary education expenditures over the entire income distribution. This, however, hides considerable cross-country variation. In Estonia, Portugal and Slovenia around 10 per cent of tertiary education expenditures are going to the bottom quintile, and, not surprisingly, the share of the top quintile in these countries is with 30 per cent to 40 per cent considerable. This is the most common pattern, namely an underrepresentation of the bottom quintile and an overrepresentation

of the top quintile. There are, however, some notable exceptions, namely the Nordic countries and Germany. In these countries expenditures to the bottom quintile account for 27 per cent (Iceland) up to 52 per cent (Denmark) of total tertiary education expenditures. This is largely the effect of the compositional factors, as in these countries, large proportions of students live outside the parental home and are thus classified as a separate household. With their low incomes they are often concentrated in the lowest quintile of the distribution. In a study that focuses on the distributive effect of tertiary education spending, Callan et al. 2008 compare for a selection of European countries the distributive effect of excluding students that live independently from the analysis.¹⁶ They find that attributing the public transfers to students living with their parents only, rather than to all students, alters the distribution of higher education expenditures considerably, in the sense that results become less pro-poor.

Figure 2f shows the size and distribution of the value of ECEC subsidies over income quintiles. On average it represents around 2 per cent of disposable income, with high levels in Sweden, Hungary and Denmark and a much lower level in Ireland. In countries like Hungary, Luxembourg, Austria, the Netherlands, the Czech Republic and Iceland, ECEC expenditures tend to go more to lower incomes than to the top groups: the first quintile receives in these countries between 23 and 28 per cent. The opposite is the case in the Nordic countries, Greece and Ireland, where the lowest quintile receives less than 20 per cent.

4.2. Incorporating Services in the Income Concept and Equivalence Scale

We now incorporate the needs associated with services in the income concept, in order to construct a counterfactual which can be used to measure the impact of services on inequality and poverty. This counterfactual is cash income corrected with an equivalence scale that accounts for needs of health care (all individuals), education (individuals aged 6 to 22) and ECEC (children aged 0 to 5 years), as explained in section 3.3.¹⁷ This income concept can be interpreted as an indicator for the living standard under the assumption that these services would not be publicly provided: it indicates in a hypothetical way how much worse off people would be without these services given their needs for health care, education and childcare. A comparison of columns (1) and (3) in Table 1 shows the inequality effect of moving from a cash income equivalence scale to one that includes needs for services. Column (3) gives inequality under the assumption that the needs for services are not met, and is hence our counterfactual against which we measure the effect of services on income inequality. This equivalence scale adjustment leads to a considerable increase in measured inequality of disposable income, indicating that these needs are relatively more

16 This was a relevant exercise for five of the seven countries in their study, namely Germany, Greece, Ireland, the Netherlands and the UK. In Belgium and Italy students are in the survey included together with their household of origin, thus making this kind of correction unnecessary.

17 The calculations have also been done for other specifications of needs (e.g. only children aged 6 to 16 have education needs). Overall, the results are similar to those with the broader definition of needs as used here.



concentrated at the bottom of the income distribution: on average the Gini increases from 0.2856 to 0.3461. This increase is rather similar across countries.

One may be surprised that the Gini coefficients in columns (1) and (4) are rather similar, suggesting that the redistributive effect of services is rather limited. This outcome follows of course from our framework discussed in section 3.3: the income concept used in column (1) is an indicator of living standards conditional on the existence of free public services, whereas the one in column (4) basically makes this conditionality explicit by incorporating both the needs for and the value of these services (as expressed in formula (1)). As we have used an EU-level corrected value of k for each target group to calculate the services-needs adjusted equivalence scale (see formula (3)), the comparison of columns (1) and (4) (as is done in Paulus et al., 2010) is in fact a sensitivity test for differences in relative spending across EU countries.

The difference between columns (3) and (4) in Table 1 results in the Reynolds-Smolensky index, which gives the reduction in inequality following from including all services (so also including health care expenditures going to the elderly) in the income concept. On average for the 21 EU countries, inequality drops substantially, from 0.3461 to 0.2842, which corresponds to around 18 per cent in the counterfactual scenario. Relative reductions in inequality are strongest in Denmark and Sweden (around 23 per cent) and lowest in Greece (13.4 per cent). In relative terms, these reductions are somewhat smaller than the ones calculated on the basis of the modified OECD scale, which is shown in the first panel of Table 1 (RE as per cent of (1)). The fact that reductions are stronger in the Nordic countries compared to Southern Europe follows from the fact that the services-needs adjusted equivalence scale is based on the average values of k for the EU. As relative spending levels on services are above average in the Nordics, these countries provide a better coverage of these needs (compared to the EU average) than countries with below average spending levels (such as in Southern Europe).

Table 1. Effect of all services on inequality (Gini coefficient; RE=redistributive effect), a comparison of the modified OECD and a services-needs adjusted¹ equivalence scale.

Equival. scale	modified OECD scale				adjusted for services needs			
	Cash disposable (1)	Extended (all services) (2)	RE (1)-(2)	RE as % of (1)	Cash disposable (3)	Extended (all services) (4)	RE (3)-(4)	RE as % of (3)
AT	0.2615	0.2091	0.0524	20.0%	0.3172	0.2591	0.0581	18.3%
BE	0.2622	0.2014	0.0608	23.2%	0.3189	0.2536	0.0653	20.5%
CZ	0.2524	0.1949	0.0575	22.8%	0.3154	0.2535	0.0619	19.6%
DE	0.2995	0.2413	0.0581	19.4%	0.3508	0.2912	0.0596	17.0%
DK	0.2451	0.1894	0.0557	22.7%	0.2973	0.2299	0.0673	22.7%
EE	0.3344	0.2714	0.0630	18.8%	0.4067	0.3457	0.0610	15.0%
ES	0.3125	0.2481	0.0644	20.6%	0.3718	0.3128	0.0589	15.9%
FI	0.2616	0.2137	0.0479	18.3%	0.3174	0.2598	0.0576	18.1%
FR	0.2638	0.2031	0.0607	23.0%	0.3194	0.2529	0.0665	20.8%
GR	0.3427	0.2840	0.0587	17.1%	0.4025	0.3486	0.0539	13.4%
HU	0.2571	0.1961	0.0610	23.7%	0.3273	0.2586	0.0687	21.0%
IE	0.3121	0.2391	0.0731	23.4%	0.3842	0.3138	0.0704	18.3%
IT	0.3216	0.2591	0.0625	19.4%	0.3774	0.3168	0.0607	16.1%
LU	0.2736	0.2147	0.0589	21.5%	0.3460	0.2819	0.0641	18.5%
NL	0.2731	0.2185	0.0546	20.0%	0.3356	0.2751	0.0605	18.0%
PL	0.3217	0.2597	0.0620	19.3%	0.3873	0.3283	0.0590	15.2%
PT	0.3682	0.2888	0.0794	21.6%	0.4319	0.3597	0.0723	16.7%
SE	0.2342	0.1798	0.0544	23.2%	0.2934	0.2255	0.0679	23.1%
SI	0.2278	0.1868	0.0410	18.0%	0.2727	0.2236	0.0491	18.0%
SK	0.2446	0.1921	0.0525	21.5%	0.3093	0.2553	0.0539	17.4%
UK	0.3283	0.2609	0.0674	20.5%	0.3863	0.3222	0.0641	16.6%
EU-21	0.2856	0.2263	0.0593	20.8%	0.3461	0.2842	0.0619	17.9%

Note 1: equivalence scale is constructed on the assumption that all individuals have health care needs, 6-22 year old have education needs and 0-5 year old have ECEC needs.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

4.3. The Impact on Inequality and Poverty

In Table 2 we look at the inequality and poverty impact of the various services going to the non-elderly population. Panel A gives the effect on inequality of the different income components. We start from extended income (including all services and using the services-needs adjusted equivalence scale) as the baseline (thus corresponding to Column (4) in Table 1). Baseline income inequality is lowest in Sweden, Slovenia and Denmark (a Gini of around 0.22), and highest in Estonia, Greece and Portugal (more than 0.34). We then calculate the Reynolds-Smolensky index for different income components going to the non-elderly population (total services non-elderly; health care non-elderly; compulsory education; tertiary education; ECEC; cash transfer excluding pensions). This index is calculated as the difference between the baseline Gini coefficient and the counterfactual Gini of income without the income component. On average, the Reynolds-Smolensky index for the total of non-elderly services is with 0.0484 much more important than the one for cash benefits (excluding pensions: 0.0359). Exceptions to this pattern are Belgium, Denmark, Finland, Ireland and the United Kingdom, where the Reynolds-Smolensky index is higher for cash than for in-kind. In Southern Europe and Estonia, on the contrary, the inequality impact of cash



benefits is relatively small (below 0.02), and this is combined with a below average inequality effect of services. Turning to the different categories of services, compulsory education has on average and in most countries the strongest effect on inequality, followed by health care. For tertiary education, the effect is much smaller, and in some countries close to zero or even slightly anti-equalising (Slovenia and Estonia). The effect of ECEC is relatively small, but positive in all countries.



Table 2. Effect of services on inequality (Gini) and poverty, equivalence scale adjusted for needs for services^{1,2}

	A: Effect on inequality						B: Effect on poverty rate					
	Gini Extended income	Reynolds-Smolensky All services non-elderly	Health care non-elderly	Compulsory education	Tertiary education	Cash (excl pensions)	Poverty rate Extended income	All services non-elderly	Health care non-elderly	Compulsory education	Tertiary education	Cash (excl pensions)
AT	0.2591	0.0479	0.0139	0.0221	0.0014	0.0033	0.1175	0.1553	0.0501	0.0608	0.0062	0.0097
BE	0.2536	0.0465	0.0140	0.0160	0.0027	0.0033	0.1410	0.1545	0.0614	0.0415	0.0110	0.0103
CZ	0.2535	0.0467	0.0147	0.0163	0.0001	0.0038	0.1001	0.1560	0.0550	0.0397	0.0065	0.0090
DE	0.2912	0.0460	0.0158	0.0132	0.0036	0.0037	0.1451	0.1354	0.0505	0.0347	0.0111	0.0083
DK	0.2299	0.0502	0.0062	0.0207	0.0084	0.0046	0.1062	0.1730	0.0380	0.0455	0.0203	0.0120
EE	0.3457	0.0437	0.0149	0.0130	-0.0006	0.0023	0.2106	0.1340	0.0483	0.0392	0.0060	0.0087
ES	0.3128	0.0414	0.0146	0.0141	0.0013	0.0029	0.2021	0.1223	0.0530	0.0347	0.0097	0.0120
FI	0.2598	0.0420	0.0091	0.0170	0.0028	0.0038	0.1352	0.1500	0.0372	0.0527	0.0108	0.0148
FR	0.2529	0.0563	0.0171	0.0187	0.0028	0.0045	0.1198	0.1808	0.0703	0.0500	0.0079	0.0140
GR	0.3486	0.0387	0.0145	0.0140	0.0028	0.0018	0.2127	0.1005	0.0443	0.0334	0.0091	0.0056
HU	0.2586	0.0611	0.0141	0.0305	0.0002	0.0074	0.1246	0.1924	0.0602	0.0771	0.0076	0.0201
IE	0.3138	0.0576	0.0178	0.0207	0.0013	0.0003	0.1608	0.1897	0.0713	0.0573	0.0125	0.0035
IT	0.3168	0.0469	0.0136	0.0163	0.0015	0.0031	0.1940	0.1232	0.0457	0.0405	0.0060	0.0106
LU	0.2819	0.0559	0.0154	0.0230	-	0.0065	0.1449	0.1569	0.0646	0.0685	-	0.0144
NL	0.2751	0.0509	0.0116	0.0232	0.0024	0.0044	0.1108	0.1584	0.0521	0.0648	0.0072	0.0127
PL	0.3283	0.0532	0.0157	0.0215	0.0011	0.0032	0.1792	0.1400	0.0506	0.0520	0.0077	0.0107
PT	0.3597	0.0536	0.0209	0.0212	0.0002	0.0021	0.1793	0.1485	0.0559	0.0462	0.0042	0.0058
SE	0.2255	0.0517	0.0068	0.0211	0.0037	0.0063	0.1028	0.1874	0.0478	0.0505	0.0084	0.0160
SI	0.2236	0.0403	0.0119	0.0162	-0.0004	0.0022	0.1124	0.1589	0.0439	0.0436	0.0080	0.0075
SK	0.2553	0.0407	0.0123	0.0139	0.0023	0.0013	0.1201	0.1282	0.0522	0.0348	0.0138	0.0028
UK	0.3222	0.0443	0.0161	0.0158	0.0012	0.0013	0.1756	0.1155	0.0496	0.0389	0.0044	0.0052
EU-21	0.2842	0.0484	0.0138	0.0185	0.0019	0.0034	0.1474	0.1505	0.0525	0.0479	0.0089	0.0102

Note 1: Equivalence scale is constructed on the assumption that all individuals have health care needs, 6-22 year old have education needs and 0-5 year old have ECEC needs.

Note 2: Poverty rate is calculated on the basis of 60% of median equivalised extended income.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.



Panel B of Table 2 presents the poverty reducing effect, starting from a similar baseline as for our inequality analysis, namely a hypothetical income concept that incorporates both the needs associated with services as well as the value of these services. The baseline is the at-risk-of-poverty rate calculated on the basis of extended income, with the poverty line set at 60 per cent of median equivalent extended income. The poverty reducing effect is presented as a point change from moving from income without the component to extended income: e.g. on average the hypothetical at-risk-of-poverty rate without services (non-elderly) would be 29.8 per cent, implying that incorporating these services in the income concept reduces the poverty rate with 15.1 percentage points to 14.7. It shows that in the absence of these services, and given that individuals have needs for these services, poverty would be much higher than it is currently.

It is striking that the poverty reducing effect of services is much larger than the one of cash transfers (excluding pensions) which is 8 percentage points. This result is found in all countries, even those where inequality reduction due to cash transfers was stronger. The poverty reducing effect of services ranges from 10 percentage points (Greece) to almost 20 percentage points (Hungary), whereas for cash transfers it ranges from around 3 percentage points (Southern Europe) to 14 percentage points (Ireland). The main drivers for services are health care and compulsory education (which have a similar poverty reducing effect of around 5 percentage points), while the effect of both tertiary education and ECEC is rather limited (no more than 2 percentage points on average and in all countries).

4.4. The Weak and Strong Pro-poorness of Cash and In-Kind Benefits

The stronger poverty and inequality effect of services may come as a surprise, as a comparison of Figure 1 showed that cash transfers are on average across EU countries more directed towards lower incomes than services. The distributive impact of policies, however, depends both on size and design (see also Cantillon et al. forthcoming). Calculating concentration coefficients indicates how income components are distributed, irrespective of their size.¹⁸ To calculate these concentration coefficients, we rank individuals according to their extended income. When the concentration coefficient has a value that is lower than the Gini coefficient of extended income (which is given in Column (1) of Table 1), then lower incomes benefit relatively more: individuals receive a higher share of the income component than their share of extended income. Thus, these concentration coefficients provide insight into

¹⁸ The concentration coefficient of an income component is calculated in a similar way as the Gini coefficient (see e.g. Kakwani 1977; Lambert 2002; OECD 2008). The difference between the two lies in the variable according to which income units are ranked. With a concentration coefficient of an income component, income units are ranked according to extended income (and not by the income component itself), while for a Gini coefficient the variable of interest and the ranking income variable are the same (namely extended income). As extended income is for all income components used as the ranking variable, concentration coefficients can be used to compare the distributive structure across income components. They can be considered as a summary indicator of the information provided by quintile distributions. Note that in Figure 6-2, quintiles are constructed on the basis of cash incomes (with modified OECD scale), whereas here units are ranked on the basis of extended income equivalised with the services-needs adjusted equivalence scale.

the pro-poorness of the various income components, independent of their size. We can make a distinction here between weak and strong pro-poorness. Strong pro-poorness corresponds to a negative concentration coefficient, whereas weak pro-poorness is captured by a concentration coefficient between zero and the value of the Gini coefficient of extended income.

Table 3. Concentration coefficients of cash benefits and services, equivalence scale adjusted for needs for services.

	All services non-elderly	Health care non-	Compulsory education	Tertiary education	ECEC	Cash (excl pensions)
AT	0.0402	0.0913	-0.0637	0.2696	-0.1422	-0.0769
BE	0.0811	0.1154	0.0148	0.1702	0.0874	-0.0837
CZ	0.0677	0.1226	-0.0973	0.3525	-0.0546	-0.0961
DE	0.0583	0.0944	-0.0363	0.1554	-0.0005	-0.0900
DK	0.1055	0.1563	0.0273	0.0825	0.1598	-0.1261
EE	0.1597	0.1620	0.0898	0.4331	0.1854	0.1382
ES	0.1235	0.1224	-0.0008	0.3264	0.1936	0.1425
FI	0.1164	0.1311	0.0368	0.2028	0.2021	-0.1255
FR	0.0592	0.0996	-0.0241	0.1463	0.0308	-0.0147
GR	0.0970	0.1182	0.0152	0.2279	0.2018	-0.0077
HU	0.0615	0.1233	-0.0445	0.3207	0.0630	-0.0146
IE	0.0771	0.1193	-0.0361	0.3002	0.2318	-0.1172
IT	0.0910	0.1157	0.0316	0.1460	0.2157	0.1862
LU	0.0293	0.1054	-0.0187	-	-0.0516	-0.0148
NL	0.0460	0.1123	-0.0919	0.2065	0.0143	-0.1579
PL	0.0693	0.0955	0.0006	0.2984	0.1623	-0.0685
PT	0.1162	0.1305	0.0245	0.3877	0.1702	0.0373
SE	0.1088	0.1707	-0.0018	-0.0063	0.2348	-0.0236
SI	0.1044	0.0929	0.0387	0.2883	0.2225	-0.0155
SK	0.0770	0.1390	-0.1237	0.2413	0.1113	-0.0055
UK	0.0614	0.0944	-0.0434	0.1435	0.2278	-0.1891
EU-21	0.0834	0.1196	-0.0144	0.2347	0.1174	-0.0344

Note: equivalence scale is constructed on the assumption that all individuals have health care needs, 6-22 year old have education needs and 0-5 year old have ECEC needs.

Source: Calculations based on OECD/EU database on the distributional impact of in-kind services.

The concentration coefficients of the various income components (Table 3) show that for the EU on average the structure of cash benefits is more pro-poor than that of in-kind benefits (-0.0344 resp. 0.0834). For almost all countries the concentration coefficient for cash transfers is negative, pointing to strong pro-poorness, and much stronger than that of services. Exceptions to this pattern are Spain and Italy, where the concentration coefficients indicate that cash benefits are only weakly pro-poor and less pro-poor than services.

When looking at the different types of services, we found that compulsory education has the strongest inequality reducing effect, even though its size is smaller than that of non-elderly health care expenditures. The negative concentration coefficient on average and in most countries indicates that poorer income groups receive a higher share of these



services than their share of extended income and points to strong pro-poorness. This result is driven by the distribution of compulsory aged individuals, which are in most countries slightly more concentrated in the bottom quintile. In almost all countries, the concentration coefficient for tertiary education is the highest of all income components, indicating that this is the least pro-poor of all. Exceptions are Denmark and Sweden, which have a strong presence of students in the bottom quintile, because of students living separately (*cf. supra*). In some countries the concentration coefficient for tertiary education is even higher than the Gini of extended income, pointing to a pro-rich distribution. This is not only the case in countries where the inclusion of tertiary education expenditures was slightly anti-equalising (Estonia and Slovenia) but also in e.g. the Czech Republic, Hungary and Poland.

Health care is rather evenly distributed and is hence only weakly pro-poor. On average the concentration coefficient has a value similar to that of ECEC (both around 0.11), though variation across countries is limited for health care. ECEC services exhibit strong pro-poorness in Austria, the Czech Republic and Luxembourg, where it is (one of) the most pro-poor policy instruments. In the Nordic countries the pattern is far less pro-poor. A more detailed discussion of this category of services can be found in Van Lancker and Ghysels (forthcoming), which focuses on the distribution of different family care policies across households with children (instead of all households, as is done in this paper).

Summarizing, these results suggest that the stronger redistributive effect and poverty reduction of in-kind benefits should be attributed mainly to their size, rather than to the way they are distributed over the population. The design of cash transfers is apparently more oriented towards lower incomes and is the instrument with the strongest pro-poorness.





5. Conclusion

Over the last 25 years, expenditure on services, especially health and child care, has increased significantly in many European countries. At the same time, spending on cash transfers other than pensions has declined as a proportion of GDP (Vandenbroucke and Vleminckx 2011). Since in-kind benefits are generally considered to be less pro-poor than cash benefits, this trend has been identified as a key reason why European welfare states proved unable to reduce relative poverty in spite of favourable conditions in terms of economic and employment growth (Cantillon 2011).

In this paper we analysed empirically the impact of services on inequality and poverty. In view of the conceptual and methodological issues, this task is fraught with difficulties. We have discussed the issues of valuation, allocation and the use of an equivalence scale adjusted for needs associated with these services. In this paper we have chosen to build further on a discussion of alternative approaches in Verbist *et al.* (2012) and the methodology proposed in Paulus *et al.* (2010) and to construct a hypothetical counterfactual which incorporates service-related needs. We thus compare an estimate of the current distribution of in-kind benefits with a counterfactual that depicts inequality and poverty in a hypothetical situation in which no publicly provided services exist.

In a first instance we have tried to answer the question whether services targeted at non-elderly individuals (who are the focus of the social investment strategy) are redistributive. When looking at the total of health care, education and ECEC, the answer is clearly affirmative for the 21 EU countries considered in this paper. Especially compulsory education and health care both reduce inequality and poverty when compared with a hypothetical situation without these publicly provided services. The answer to the question whether these in-kind benefits are less redistributive than cash transfers requires more consideration. When comparing the Reynolds-Smolensky index for cash transfers with that of in-kind benefits, one is inclined to conclude that services reduce inequality more than cash benefits do. However, it is important to disentangle a size and a design effect, as services going to non-elderly individuals are in all countries much more important in size than cash transfers (excluding pensions). Therefore, we have also calculated concentration coefficients of the various instruments, thus allowing us to focus on the distributive structure independent of size. These coefficients tell us that cash transfers turn out to be more pro-poor than in-kind benefits in most countries. In this perspective, cash transfers are on average in the EU the most pro-poor of the policy instruments considered here, closely followed by the in-kind benefit from compulsory education. The in-kind benefits derived from tertiary education expenditures is the least pro-poor (and in some countries even pro-rich). These results are to an important extent driven by the distribution of beneficiaries: in gen-

eral, compulsory education pupils tend to be situated more in the middle and the bottom of the income distribution, whereas tertiary education students are overrepresented in the higher regions of the income distribution.

For answering the question of evolution, i.e. whether the relative shift to services has eroded the redistributive power of the welfare state, there is little evidence on comparisons over time. The only exception is OECD (2011), which compares the inequality reduction through services for 2000 and 2007 for 17 OECD countries (including 14 'old' EU member states), indicating that, on average across countries, inequality reduction of services has remained remarkably stable over this period. However, countries that improved inequality reduction through services were also those countries that experienced an increase in terms of size (expressed as a share of cash disposable income) (and vice versa). Whether these changes went hand in glove with corresponding (or opposite) changes in the redistributive impact of cash transfers requires further investigation.



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Information on the GINI project

Aims

The core objective of GINI is to deliver important new answers to questions of great interest to European societies: What are the social, cultural and political impacts that increasing inequalities in income, wealth and education may have? For the answers, GINI combines an interdisciplinary analysis that draws on economics, sociology, political science and health studies, with improved methodologies, uniform measurement, wide country coverage, a clear policy dimension and broad dissemination.

Methodologically, GINI aims to:

- exploit differences between and within 29 countries in inequality levels and trends for understanding the impacts and teasing out implications for policy and institutions,
- elaborate on the effects of both individual distributional positions and aggregate inequalities, and
- allow for feedback from impacts to inequality in a two-way causality approach.

The project operates in a framework of policy-oriented debate and international comparisons across all EU countries (except Cyprus and Malta), the USA, Japan, Canada and Australia.

Inequality Impacts and Analysis

Social impacts of inequality include educational access and achievement, individual employment opportunities and labour market behaviour, household joblessness, living standards and deprivation, family and household formation/breakdown, housing and intergenerational social mobility, individual health and life expectancy, and social cohesion versus polarisation. Underlying long-term trends, the economic cycle and the current financial and economic crisis will be incorporated. Politico-cultural impacts investigated are: Do increasing income/educational inequalities widen cultural and political 'distances', alienating people from politics, globalisation and European integration? Do they affect individuals' participation and general social trust? Is acceptance of inequality and policies of redistribution affected by inequality itself? What effects do political systems (coalitions/winner-takes-all) have? Finally, it focuses on costs and benefits of policies limiting income inequality and its efficiency for mitigating other inequalities (health, housing, education and opportunity), and addresses the question what contributions policy making itself may have made to the growth of inequalities.

Support and Activities

The project receives EU research support to the amount of Euro 2.7 million. The work will result in four main reports and a final report, some 70 discussion papers and 29 country reports. The start of the project is 1 February 2010 for a three-year period. Detailed information can be found on the website.

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GINI GROWING INEQUALITIES' IMPACTS

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