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DISCUSSION PAPER 2

**BROADENING THE INCOME CONCEPT:  
HOW AND WHY TO CONSTRUCT  
NON-CASH RESOURCE  
NEEDS ADJUSTED EQUIVALENCE  
SCALES?**

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BROADENING THE INCOME CONCEPT:  
HOW AND WHY TO CONSTRUCT NON-CASH RESOURCE NEEDS  
ADJUSTED EQUIVALENCE SCALES?

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**Abstract:** In most empirical studies the analysis of income distributions is limited to the concept of current cash disposable income. Yet, from a welfare perspective, all economic resources that a household commands determine its welfare levels. Furthermore, non-cash resources just as cash resources are comparably significant economic support measures to households. Thereby, broadening the definition of economic resources from the narrow concept of current disposable income (the sum of market income and cash transfers minus direct taxes and social insurance contributions) towards the inclusion of non-cash income components is an important step forward in a more accurate accounting of household economic welfare. In this paper we focus on the inclusion of the value of public services in the income concept.

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## 1. Introduction

In most empirical studies the analysis of income distributions is limited to the concept of current cash disposable income. Yet, from a welfare perspective, all economic resources that a household commands determine its welfare levels. Furthermore, non-cash resources just as cash resources are comparably significant economic support measures to households. Thereby, broadening the definition of economic resources from the narrow concept of current disposable income (the sum of market income and cash transfers minus direct taxes and social insurance contributions) towards the inclusion of non-cash income components is an important step forward in a more accurate accounting of household economic welfare. In this paper we focus on the inclusion of the value of public services in the income concept.

Welfare comparisons based on extended incomes (i.e. the sum of cash income and monetary value of in-kind benefits) faces numerous methodological challenges. More and more researchers notify that over-stated household welfare levels are to be observed for the households receiving both non-cash resources and cash income if “traditional” (cash expenditure derived) equivalence scales are used for inter-household welfare comparisons (e.g. Klavus, 1999; Paulus, Sutherland, & Tsakloglou, 2010). This is related to the fact that public services often happen to be an important ‘budgetary relief’ for households, which are at a higher risk of poverty, such as families with children (i.e. use of public education) or families with sick members (i.e. public healthcare use). Therefore, unless needs for these services are considered, the equivalised extended income could indicate disproportionately higher welfare levels among the more vulnerable household types. Consequently, this could distort both welfare evaluations and adequate policy actions.

The latter issue is one of the methodological concerns regarding inclusion of the non-cash incomes. Many others exist. Nevertheless, up to day little consensus is made on what is the conceptually and practically acceptable way to compare household welfare levels when non-cash incomes are added to the economic resources’ list.

This paper attempts to bring some structure in this methodological debate. It serves as a methodological guide on the non-cash resource inclusion process, the major existing approaches and their limitations, as well as conditions under which one or another method could be the conceptually or practically proffered approach.

The non-cash benefit inclusion process concerns a few distinctive steps: selection of public services to be included, valuation of their monetary value, allocation of the value to households and/or individuals, and (potential) adjustment for associated non-cash needs in the applied equivalence scale. In this paper, we focus on the last step. Where relevant we highlight the non-cash needs adjustment dependence and inter-linkage with other inclusion process steps too.

The paper is structured in the following way. First, we review the four major steps for inclusion of public services in the income concept. Second, we elaborate on diverse conceptual issues related to the needs adjustment step. In particular, we explore the arguments provided in the literature with respect to the rationale of using equivalence scales. Furthermore, we discuss why, what and how the non-cash incomes inclusion requires the underlying needs adjustment step. Third, we review a few distinctive non-cash needs

adjustment methods in relation to issues highlighted in the section before. Finally, we draw conclusions and discuss selected methodological considerations for the non-cash incomes inclusion in the regional circumstances of Flanders, Belgium.

## 2. Major steps for inclusion of public services in the income concept

Incorporating the value of non-cash (also referred to as in-kind) incomes in household income raises a wide range of methodological and conceptual questions, such as selection of in-kind resources to be included, estimation of their monetary value, distribution of the aggregate value among individuals and households, adjustment for differences in needs for cash and non-cash incomes, etc. Some of these issues are inter-linked due to the sequence of assumptions and decisions to be taken in the process. For this reason, we describe each of the four major steps in the non-cash income inclusion in the sections below:

- *Selection*: what non-cash resources should be included into the extended income concept?
- *Valuation*: what monetary value should be assigned per non-cash component?
- *Allocation*: how to identify recipient population?
- *Adjustment*: how adjustment for differences in cash and non-cash resource needs should be achieved for coherent inter-household welfare comparisons?

### 2.1. Selection of non-cash transfers

Non-cash (also called in-kind) incomes refer to an array of diverse economic resources, such as government-provided services, home production, and other non-cash income components that are usually omitted from conventional statistics (i.e. fringe benefits at work, in-kind gifts from family members, etc.). All these in-kind transfers represent significant additions to household economic resources. Nevertheless, methodological issues with respect to monetary value imputation are different per type of benefit, would it be home production or receipt of public services<sup>2</sup>. In this paper we focus on government provided (public) in-kind transfers (also referred to as public services). Specifically, we discuss public in-kind transfers that provide with a defined benefit to a household or an individual rather than the whole population quasi-indivisibly (such as operating costs of institutions, public defence, public infrastructure, etc.), as in the case of pure public goods. What and how significant are benefits under this category?

Overall, public in-kind transfers are highly diverse across countries in size and by target population groups. On average public in-kind transfers represent around 21% of households' disposable income, with large disparities observed from one country to another (e.g. less than 10% of household income in Mexico to above 40% in the Nordic countries, see Marical et al. (2006)).

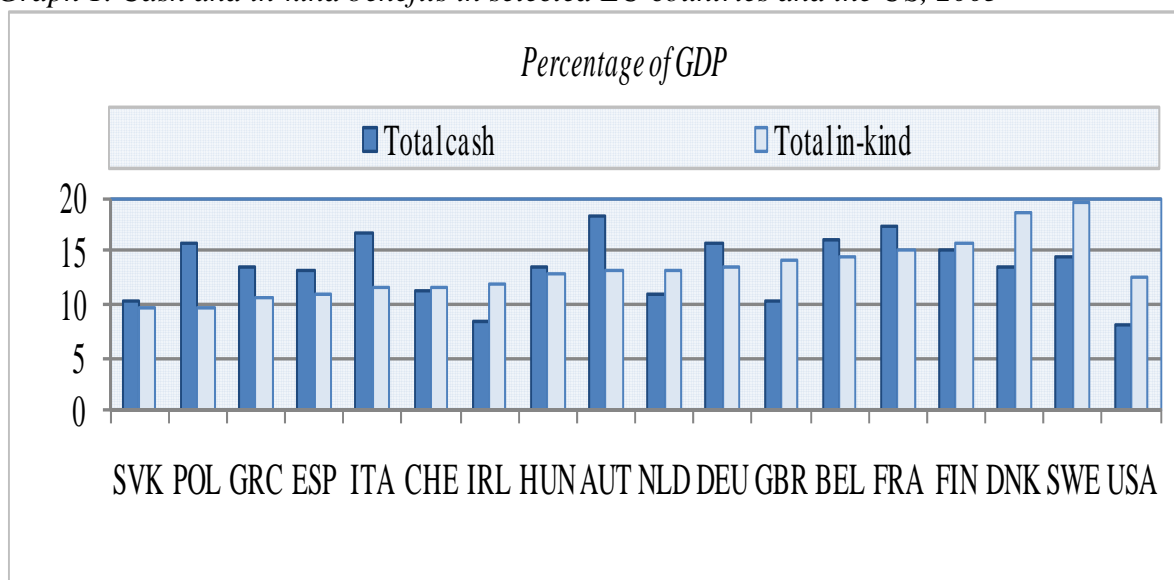
As shown in the Graph 1, non-cash resources are as significant as cash resources with respect to the size of public expenditures. In some countries, as Ireland, Sweden or the US, the non-cash benefits even exceed public spending on cash transfers. In terms of percentage of GDP, the in-kind benefits account from around 9% of GDP in Poland or Slovak Republic to twice as much in Denmark or Sweden.

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<sup>2</sup> For example, services provided by individuals to their families are usually not recorded in any official statistics. Thus, even though they might represent a significant share of economic welfare, methodological basis for the imputation of their scope and monetary value is extremely complex (e.g. Atkinson, 2005).

Among diverse in-kind benefits, health care represents the biggest share of public in-kind expenditures (see Graph 2). Despite differences in organization of public health care systems, countries spend from around 4% of GDP in Poland to around 8% of GDP in France. Education is the second biggest public in-kind expenditure, with public expenditures even exceeding those on healthcare in a couple of countries, such as Poland and Denmark.

Graph 1. Cash and in-kind benefits in selected EU countries and the US, 2005

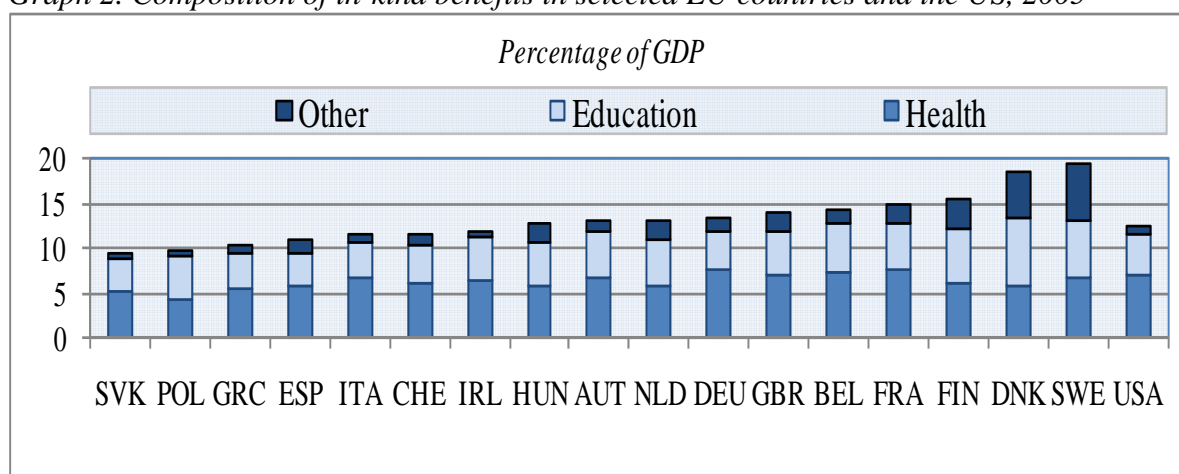


Note: In-kind benefits cover the following policy areas: old-age, survivors, incapacity, health, family, education and other social policy areas, based classification provided in the OECD Social Expenditure database (SOCX). The included EU-countries are OECD members; Luxembourg is excluded in this graph due to missing education expenditures. The EU countries are ranked by the GDP share on in-kind benefits.

Source: OECD Stat. Extracts (September, 2010)

In addition to these two major public services, child care, old-age in-kind benefits, and even active labour market programs are often listed as the major “other” in-kind services. As shown in the Graph 2, the “other” in-kind benefits are almost as important as healthcare or education in Sweden or Denmark.

Graph 2. Composition of in-kind benefits in selected EU countries and the US, 2005



Note: the category “other” covers the following policy areas: old-age, survivors, incapacity, family, and other social policy areas, as classified in the OECD Social Expenditure database. Exact figures available in the Annex: Cash and in-kind social expenditures.

Source: OECD Stat. Extracts (September, 2010)

Overall, OECD describes 9 *policy areas of social purpose*, which traditionally provide with both cash and in-kind benefits. We list the major in-kind benefit programs and adequate policy areas types in the table below. According to this classification, benefits are classified as in-kind benefits due to their earmarking functions, as in the case of social housing or food stamps programmes. Apart from these services and the earlier mentioned education services, also other public spending is relevant in this context. Major examples include subsidies for public transport, for energy and other public utilities. These can be attributed to individual users, and directly affect the welfare of (specific groups of) individuals.

Table 1. In-kind benefits by public policy area

	<b>Policy area</b>	<b>Benefits in-kind</b>
1.	Old age	Residential care/Home-help services
2.	Survivors	Funeral expenses
3.	Incapacity-related benefits	Residential care/Home-help services Rehabilitation services
4.	Health	Healthcare services (usually only in-kind benefits)
5.	Family	Day-care/Home-help service
6.	Active labour market	Employment service Labour market training
7.	Unemployment	In-kind assistance <sup>3</sup>
8.	Housing <sup>4</sup>	Housing assistance
9.	Other social policy areas	Social assistance

Source: *The Social Expenditure database: An Interpretive Guide SOCX 1980-2003*, OECD (2007)

In this paper, we argue that it is important to account for the monetary value of all (free or nearly free) public in-kind transfers received by households, if coherent inter-household welfare comparisons in the international settings are to be made. Given the diversity of public in-kind transfers, the appropriate methodologies on the valuation and allocation of their monetary value differ. We shortly discuss them in relation to the major public services in the forthcoming sections.

## 2.2. Valuation

It is extremely difficult to estimate the monetary value of public services as there is no clear market transaction to rely upon for the price estimate as in the case of private commodities' market (Atkinson, 2005). Until now, a *production cost approach* is used as the most typical way to respond to this issue (Aaberge & Langørgen, 2006; Marical et al., 2006; Paulus et al., 2010; Smeeding et al., 1993). This approach assumes that the monetary value of an in-kind benefit is equal to its production cost, which makes the treatment of in-kind transfers similar to cash transfers (Aaberge & Langørgen, 2006). Nonetheless, a number of critical points are raised in relation to the use of this approach. We list the major ones below.

<sup>3</sup> For example, unemployment benefits in some countries are provided either cash, in-kind or both. In-kind unemployment assistance could be provided in the form of food vouchers, clothing, rents, educational assistance, etc. (source: <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-246X.1997.tb01086.x/pdf>)

<sup>4</sup> Despite classification as an in-kind benefit in the OECD Social Expenditure database, public spending on housing mainly covers cash subsidies in this database. Therefore, we do not include it in Graphs 1&2.

General criticism of the approach is linked to the fact that the production cost does not necessarily reflect the user's value of the service. Economists usually view in-kind transfers as behavior constraining transfers, which is not the case with cash benefits. The in-kind transfers reduce the individual's perception of the value received, as it cannot be exchanged to any other goods. On the other hand, market failures and paternalism on behalf of the government justify (general) public provision of services. If left to the private markets, availability of (some) public services would be strictly reduced, consequently raising questions on their potential value (pricing) under such circumstances.

Production cost as a monetary estimate of the service value is often questioned due to numerous observations of inefficiencies in production (and thus costs) in government provided services. Higher costs do not necessarily imply higher value of the services received. On the international scale, the production cost approach is therefore often criticized for "effectively neglecting differences across countries in the quality and efficiency in the provision of these services" (Marical et al., 2006). Economies of scales in public provision could offset some inefficiencies related to the extra costs. Nevertheless, the combination of these diverse factors simply implies that production costs represent the "biased" value of the in-kind good.

Some criticism of the approach also specifically concerns the ways the production cost is estimated. It is usually established from the national accounts systems, which implies that the estimated value is mainly based on the labour rather than the capital equipment costs (Marical et al., 2006). This could lead to the under-estimation of the "true" value of the services provided.

Moreover, Atkinson (2005) points out that the national accounts established national income provides only a crude total measure of welfare. As national accounts trace the flows of goods and services, immeasurable welfare impacts relate to occurrence of epidemics, natural disasters or wars - that can have major negative effects on welfare - as well as scientific discoveries or inventions - that can have significant positive impacts (Atkinson, 2005, p. 7). This implies that even if the value for all public in-kind benefits would be estimated based on the national accounts, it would not fully capture the created "total" welfare. Important ongoing discussions though are taking place on how to overcome (some of) the current limits related to information in the national accounts in order to improve measures of the government's output (e.g. Atkinson, 2005).

Outside the issues of the national accounts, Langorgen (2004) outlines additional deficiencies of the production cost approach. As an example, this study establishes the value of home care based on the data on labour hours of direct care per week. The recognition though is made that the available data does not permit accounting for indirect costs of administration and travelling between clients, as well as heterogeneous treatment of labour quality and thus prices.

Data access is actually among the major issues behind sluggish development of alternatives to the production cost approach. An alternative to the production cost approach would be 1) to evaluate what an individual would have spent if similar services have been bought on the market or 2) to estimate the individual willingness to pay for them (Marical et al., 2006). As mentioned above, the information requirements on these valuation approaches are highly demanding. So are complexities with respect to behavioural and market performance issues.



### 2.3. Allocation

Depending on the non-cash resource to be included, a couple main allocation methods emerge from literature discussions. The *actual use approach* is typically used to allocate the monetary value of educational services (Antoninis & Tsakloglou, 2001; Callan & Keane, 2009; Garfinkel, Rainwater, & Smeeding, 2006). This method is based on actual participation principle and implies that only individuals who are actually using services are defined as target population. A health care value, on the other hand, is typically assigned either by the *actual consumption approach* or by the risk related *insurance-value approach*.

The *actual consumption approach* often imputes monetary value based on a detailed data of the effective use of health care services by individuals. This method though faces criticism on the grounds that distribution of health care could be highly inequitable (e.g. Callan & Keane, 2009). Therefore, unless associated healthcare needs could be identified and adjusted for, welfare comparisons would be corrupt with diverse biases. Based on our current knowledge, the needs adjustment has not yet been addressed by this approach yet.

The target population of *insurance-value approach* is insurance covered population. Here, the insurance value is the amount to be paid by an individual so that the provider, such as government or employer, would have just enough revenue to cover the associated claims (Smeeding, 1982). In practice, the assigned “value of premium” is often differentiated by risk groups and is often based on specific characteristics, such as age, sex, or even socio-economic position.

### 2.4. Needs adjustment

Most empirical studies use the same equivalence scale for cash and non-cash incomes, thus assuming that the needs are the same in both cases. As several studies have pointed out, this is a very debatable assumption (see Radner, 1997, Aaberge et al., 2010; Paulus et al., 2010). A general review of the conceptual and methodological issues related to needs adjustment when including non-cash incomes is the main focus of the next section.

It should be noted that needs adjustment cannot be discussed in complete isolation of decisions taken in the prior three inclusion steps, namely selection, valuation and allocation. If relevant, we thereby show how these preceding steps influence conceptual and methodological decisions related to the needs adjustment.

## 3. Needs adjustment in detail

More and more researchers notify that over-stated household welfare levels are to be observed for the households receiving both non-cash resources and cash income if “typical” (cash expenditure derived) equivalence scales are used for inter-household welfare comparisons (e.g. Klavus, 1999; Paulus et al., 2010). This is related to the fact that non-cash incomes often happen to be an important “budgetary relief” for households, which are at a higher risk of poverty, such as families with children (i.e. use of public education) or families with sick members (i.e. public healthcare use). Therefore, unless needs for non-cash services are considered, the equivalised extended income could indicate disproportionately higher welfare levels among the more vulnerable household types. Consequently, this could distort both welfare evaluations and adequate policy actions. Why this is the case is discussed in more detail in the sections below.

### 3.1. The rationale behind “typical” equivalence scales

Klavus (1999) and Blackorby & Donaldson (1993) stress the need of equivalence scales in order to compare welfare levels in relation to a certain reference household. An equivalence scale rate for a given household is a money/well-being ‘exchange rate’ based on how much money is required to reach a given level of well-being, normalised by the amount required for some reference household type (Binh & Whiteford, 1990; Buhmann, Rainwater, Schmaus, & Smeeding, 1988; Coulter, Cowell, & Jenkins, 1992; Nelson, 1993). Atkinson & Bourguignon (1990) define equivalence scales as factors designed to reduce income and household composition effects into a single dimension for the purpose of inter-household welfare comparisons. Applying the equivalence scale rate  $e_i$  for a household  $i$  on nominal income  $X_i$  gives us equivalent income  $Y_i$ :

$$Y_i = \frac{X_i}{e_i}$$

Income thus corrected for needs is also called ‘welfare’ or ‘living standard’.

Blackorby and Donaldson (1993) make an important note on the concept of a household’s welfare: households create demands and allocate goods and services to individual household members, as well as to the overall household consumption (i.e. public and semi-public household goods, such as housing), whereas household members attain certain well-being levels (utility). A comparative evaluation of households’ welfare is therefore a complex task that requires aggregation of individuals’ utilities into a household welfare. In order to simplify this problem, equivalence scales are employed as an easy-to-use conversion factor to transform different households’ preferences into single person units with the same set of preferences. This enables equivalent inter-household comparisons. Nevertheless, strong identifying assumptions should be made.

It is also important to stress that equivalence scales act as “welfare” conversion factors for *monetary* income or *monetary* household needs. This is mainly associated with the fact that equivalence scales are usually estimated from the observed or inferred (cash) expenditure data and thus reflect cash expenditure needs (Klavus, 1999). Therefore, equivalence scales refer to the amounts of *cash* income necessary for different households to reach the same welfare level (Nelson, 1993).

Coulter et al. (1992) distinguish 5 ways to derive an equivalence scale:

1. Econometric equivalence scales based on models of household behaviour;
2. Subjective scales derived from what people (more specifically respondents in surveys) say;
3. Budget standard scales built on opinions expressed by experts;
4. Social assistance benefits scales, derived from rules applied by official social services;
5. Pragmatic equivalence scales.

Each of these methods is based on certain normative judgements. Coulter et al. (1992) are reluctant to argue in favour of any particular one of these scales. The most often used in empirical applications are the pragmatic scales, which usually refer to a number, type and age

of household members as summary household characteristics for the construction of cash expenditure compatible equivalence scales<sup>5</sup>.

To specify an equivalence scale three choices have to be made (Jenkins and Lambert, 1993). First of all, one has to decide which household characteristics summarise differences in needs, such that the population can be partitioned into subgroups differentiated by these needs (as in the example of the pragmatic scales). Next, a judgement has to be made on the gradation of needs, such that household types can be ranked in terms of their needs. In this context, economies of scales are very relevant. Thirdly, when household types are ranked according to their needs, it has to be decided upon how much more needy one group is compared to every other type. It is especially this cardinal aspect on which there is least agreement among researchers.

The weight selection in relation to certain household characteristics generally implies a practical assumption that there are a few crucial household attributes, which reflect overall cash resource needs. For example, Jenkins & Lambert (1993) refer to household size and composition as *summary characteristics* of households' differences, which are relevant to assessment of *income distributions* and imply a population partition by (income) needs of single adults, childless couples, couples with children, etc. Similarly, Cowell & Mercader-Prats (1999) point to the link between needs and income by stating that an assessment of welfare rankings should take into account people's differences in terms of their non-income attributes, which are considered relevant in assessing income distributions.

Given that households could allocate some resources for the entire household rather than specific individual needs, economies of scales are often seen as the second major rationale of constructing equivalence scales (e.g. Blackorby & Donaldson, 1993; Klavus, 1999; Smeeding et al., 1993). This is mainly due to observations of public and semi public consumptions within the household (e.g. Blackorby & Donaldson, 1993) and decreasing marginal consumption costs related to having an additional/younger household member (e.g. Klavus, 1999).

Social value judgements on the priority of needs of different household members also have a great influence on the equivalence scale schedules (e.g. Atkinson & Bourguignon, 1990). The latter issue is raised due to numerous concerns that pure household consumption patterns cannot be used as a solely source of "equivalence" information for the purpose of inter-household welfare judgements. As stated by Muellbauer & Van De Ven (2004, p. 2), "equivalence scales that are estimated from expenditure data necessarily depend upon exogenously imposed value judgements".

As a result of these different factors, a wide range of equivalence scales are applied in empirical welfare studies (e.g. Atkinson & Bourguignon, 1990; Stewart, 2009). For example, McClements equivalence scale sets an age increasing weight schedule for children. In this scale, a child under one year old implies a one tenth equivalent share of the household head consumption needs, whereas a presence of child aged 16 to 18 corresponds to slightly less than 40% of household head equivalent cash needs. Many other equivalence scales do not differentiate over needs of differently aged children. In the widely used EU scale, also called the "modified OECD equivalence scale", each child is assigned a 0.3 weight. The square root equivalence scale only takes into account the number of household members. Distributional

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<sup>5</sup> Numerous debates exist with respect to construction of cash expenditure compatible equivalence scales, however, this discussion is left outside the scope of this paper.

assessment of welfare (i.e. poverty and inequality estimates) is usually reported to be highly sensitive to the applied equivalence scale (e.g. Stewart, 2009).

In this paper we refer to all cash expenditure derived equivalence scales (without distinction between the methods of their derivation) as “typical” equivalence scales. We use the term “adjusted” equivalence scale to refer to equivalence scales, which (should) incorporate both needs for cash and non-cash resources, implying that adjustment for non-cash resources should be implemented additionally. Following Aaberge, Langørgen, & Lindgren (2010), and in line with the above provided arguments, we make an assumption that “typical” equivalence scales account for differences in needs for all cash income resources.

### 3.2. Why to adjust?

In this section we point to why we should consider needs adjustment when including non-cash incomes. In general, inclusion of non-cash income components may give rise to what Radner (1997) refers to as the “consistency problem”: some types of non-cash income may have needs associated with them that are unmeasured in typical equivalence scales. In this paper, we build further on this consistency problem by highlighting five major needs-related issues that arise if one wants to incorporate public services in the income concept:

- 1) Consistency between the final list of resources and associated needs
- 2) Economies of scales in cash and non-cash resources
- 3) Intra-household distribution of resources
- 4) Substitution of resources
- 5) Coherency among inclusion steps

The listed issues, in fact, highlight important differences in characteristics between cash and (public) in-kind resources. Furthermore, they point to a couple of conceptual considerations regarding non-cash needs accountancy in typical equivalence scales (i.e. substitution of resources) and regarding coherency of needs adjustment in relation to other inclusion steps. Overall, the discussed issues build up the argumentation to have different equivalent scale schedules (at least) when benefits of public services are added to the cash income list.

#### 3.2.1. Consistency between the list of resources and associated needs

Following Radner (1997), the application of the “typical” equivalence scales is often inappropriate both conceptually and empirically. Conceptually, the problem arises due to the fact that most “typical” equivalence scales are estimated on the basis of cash expenditure data, as mentioned above. The “consistency problem” then describes inadequacy of the income definition (if noncash incomes are included) to the associated noncash income needs, which are not captured by the typical equivalence scales. Thus, the conversion factors embedded in the typical equivalence scales are seen as not able to account for the non-cash resource utilisation patterns.

Empirically, as Radner (1997) points out, the importance of emerging consistency problem could vary by the type of included noncash income, by the used wellbeing measure or even by the type of the typical equivalence scale. For instance, this study indicates that consistency problem is not an issue for the inclusion of the food stamps’ value. This is related to the fact that food stamps are used as cash income to purchase food, the consumption patterns of which are already accounted for in the typical equivalence scales.

### 3.2.2. Economies of scales in cash and non-cash resources

As said before, economies of scales are one of the major factors behind the rationale of using “typical” equivalence scales. Consumption economies of scales, however, are often considered not present in the use of non-cash benefits (Smeeding et al., 1993). For example, it is often argued, that health care provision is individual needs’ specific and, therefore, is adjusted for and consumed strictly by individuals. Alike, a household cannot easily exhibit economies of scales for a number of other public services, such as education, transport services, or long-term care. Most of these in-kind benefits could not be shared on the household level, as they are strictly targeted and could only be used by eligible (needy) individuals.

On the other hand, some studies notice that certain in-kind benefits, as social services or infrastructure provision, can exhibit economies of scale. For example, Aaberge & Langørgen (2006) argue that publicly provided assistance with household work directly yields benefits to all household members. In this case, the public service might be targeted to support the elderly, however it provides with the common household good – the household assistance. This type of service benefits all household members.

Langørgen (2004) shows that the size of the household is likely to affect the need and thus the scope of provided public home-care. The study observes that larger households are able to provide more of informal care to their members, subsequently reducing the need for an identical public service provision. In addition, the study argues that the time needed for activities, such as cleaning, purchasing and cooking, is the same whether the care is provided for one or two people living in the same household.

In sum, the quoted studies infer that at least partial economies of scales could be assumed in the provision of certain public services and are dependent on household characteristics.

### 3.2.3. Intra-household distribution of resources

Numerous studies indicate that equal sharing of economic resources among all household members is a default assumption in the typical equivalence scales (e.g. Garfinkel et al., 2006; Nelson, 1993). As pointed out by Aaberge & Langørgen (2006), this assumption is “simply a consequence of sparse information on the internal distribution of consumption within families”. When it comes to non-cash resources, though, such assumption is often highly invalid by default. The provision of many in-kind benefits is actually person specific and explicitly could not be transferred to the other household members (i.e. education, healthcare, public transport entitlements, etc). For this reason, a number of studies argue that in-kind benefit inclusion into the monetary incomes should be done on an individual basis (e.g. Garfinkel et al., 2006). Consequently, this would imply differential economic welfare levels within the household.

However, on the practical basis, most of the studies in the field do assume equal distribution of resources even if non-cash transfers are included. It is partially related to the argument that certain distribution of in-kind benefits within the family is feasible, especially if some economies of scales in consumption are observed, as in provision of household care. Partially, it is related to the idea that the freed cash resources due to a receipt of a non-cash transfer could be used by all household members. Such reasoning, for example, influences assumption of equal distribution of resources in Aaberge & Langørgen (2006).

### 3.2.4. Resource substitution

Here, we would like to stress the implication of the above mentioned concepts of the freed cash resources. A number of studies, among them Radner (1997) point to the fact that “typical” equivalence scales are actually estimated on cash consumption patterns, which are only possible given the existence of the national benefit systems, such as healthcare services or educational services. They can be considered as “conditional on” the free provision of services like health care and education (Paulus et al. 2010). Thereby, the receipt of these free services enables different cash spending on the other household goods and services. Furthermore, needs that we refer to as non-cash benefit needs, could be fully or partially (i.e. home provision) qualified as cash needs, if public free provision would not be available. As people get sick, there is a need for using healthcare services, whether provided in-kind or paid out of pocket on the market.

This implies that household needs for noncash services are needs which influence cash consumption patterns given the context of a certain national public system. We could also infer that the non-cash needs thereby exist despite our value judgment on their inclusion or exclusion in the typical equivalence scales. If so, the non-cash needs could be viewed as affecting household welfare levels aside our ability to use a broadened income list to coherently account for the applicable non-cash income receipts. This leads to the discussion point that is already outside the scope of this paper – a construction of the typical equivalence scales.

### 3.2.5. Coherency among inclusion steps

The last issue is rather technical than conceptual and regards harmonization of methodological choices made in the four non-cash value inclusion steps: policy selection, valuation, allocation and needs adjustment. For example, Radner (1992) argues that it is necessary to ensure coherency between valuation and needs adjustment steps of the inclusion process. The suggestion is made that if certain needs are taken into account for establishing the varying levels of the monetary value of a certain benefit, these needs should be discounted for when making further equivalence scales adjustments.

Needs estimation is sometimes made in line with the specific allocation method, such as the actual use approach. Nevertheless, this should be done with particular cautiousness, as reliance on utilization data might lead to bias in accounting for needs of those people who are not able to access or under-utilize public services. On the other hand, if allocation process is justified by legal regulation and standardization of services, the observed distribution of services could be useful for the evaluation of the basic needs.

Policy selection and needs adjustment steps are also interlinked: not all in-kind benefits, as mentioned above, contain needs that are not yet adjusted for by the typical equivalence scales (i.e. food stamps, social housing).

## 3.3. What needs to adjust for?

In this section, we explore how ‘non-cash needs’ could be identified and how the used definition matters for the method of needs adjustment, as well as choices made in the other inclusion steps. No study on the construction of sets of equivalence scales covering differences in needs for the entire population exists, as the empirical research on the topic

mainly investigates particular population groups or specific situations, according to Paulus et al. (2010). Our examples on the needs' definition mainly focus on two major public services, namely education and health care. If relevant, we make observations on differences with other public services too.

In the domain of health care, needs are first and mainly related to physical characteristics or levels of functional abilities. Researchers have often focused on the needs of individuals with acute health statuses, such as chronic illness or disability (Jones & O'Donnell, 1995; Klavus, 1999; Zaidi & Burchardt, 2005). Both Jones & O'Donnell (1995) and Zaidi & Burchardt (2005) argue that disability status is related to additional household expenditures if compared to reference (healthy) households. Jones & O'Donnell (1995) attempt to construct equivalence scales in order to measure the impact of health (disability) on household living standards, with the latter one estimated from the cash expenditure data (for fuel and transport). The study estimated equivalence scale suggests significant and positive consumption costs of disability. Furthermore, Zaidi & Burchardt (2005) note that aside additional expenditures, certain physical characteristics, as disability, reduce people's ability to convert income into the standard of living. It is argued that these two reasons make a strong foundation for health status to be taken into account for the construction of the adjusted (and typical) equivalence scale.

A number of relatively easy-to-observe demographic variables, like age and gender, are also used to describe people's differences in needs for healthcare. These are considered as predisposing factors of individual's health in the healthcare literature (Lewis, Fein, & Mechanic, 1976). Income level is also sometimes seen as a potential non-cash resource needs identifying factor. Paulus et al. (2010), though, argue that needs for health care and education are likely to vary far more with physical characteristics as age rather than with income. Other researchers point out that income as a needs underlying factor might indicate higher (healthcare) needs among richer people. This is mainly due to numerous observations that richer people tend to use more of (certain) healthcare services. Nevertheless, the society should not assign higher needs to richer individuals than to the poorer ones (Ferrer-i-Carbonell & Van Praag, 2002).

The way to get around socio-economic inequalities in needs is by defining society accepted need levels. This is done in a few recent studies on in-kind benefit value inclusion. For example, Langorgen (2004) and Aaberge, Bhuller, Langørgen, & Mogstad (2010) argue that needs for public in-kind transfers, such as healthcare or long-term (home) care, could be derived from public expenditures that are minimally required to cover basic needs. Here, minimum expenditures indicate relative needs of different target groups, as they are considered to be a result of central government regulations, expert opinion, and/or a consensus among local governments about how much spending the different target groups need, given the budget constraint that the municipalities face.

A number of studies (Aaberge et al., 2010; Klavus, 1999; Langorgen, 2004) also suggest to link standards based in-kind needs with other individual and household characteristics, such as mental abilities, age, type of household or access to private (informal) care. For example, a need for home care might be dependent on household characteristics: an ill person living in a single person household might need more public services compared to a similarly ill person living in a larger household. The difference in needs of home care here is related to higher possibilities of (informal) family support within larger families.

In the domain of education Callan & Keane (2009) propose, that educational services underlying needs should be evaluated on the basis of compulsory and free education provision. Here, compulsory education is seen as the society agreed standard of educational level, which is needed by all. If so, then compulsory education should be attainable by all and thus, not altering the relative well-being of recipient individuals (households).

Overall, the way the needs are defined influences what monetary value is going to be assigned to the in-kind transfer (i.e. only higher education value as considered in Callan & Keane (2009) or value of all educational services). Furthermore, all cited definitions directly or indirectly refer to economic costs associated with the needs for a certain public services, be it need healthcare services or education. Therefore, we could generalize that non-cash needs existence implies additional/different monetary household income/expenditure demands. This makes non-cash resource needs comparable to cash resource needs, at least from the perspective of economic welfare comparisons. This is illustrated by Klavus (1999) who shows that a household with a chronically ill member needs 40% more income as non-cash transfers to reach the well-being level of a healthy reference household.

### **3.4. How to adjust?**

From the very start of the paper, we have implicitly suggested that needs adjustment should be implemented via equivalence scales. The primary argument behind such a proposal is the main property of equivalence scales to serve as correction factors for welfare comparisons. Thus, it seems natural that heterogeneity in non-cash needs could be dealt similarly to heterogeneity in cash needs – i.e. by application of equivalence scales.

In this section, nonetheless, we re-open this statement for wider discussions. Here, we do question if adjustment of the typical equivalence scale is the right way forward to account for individual and household differences in non-cash needs? And if yes, how should we aggregate the cash and the non-cash incomes compatible equivalence scales?

In principle, three ways are possible for non-cash needs adjustment: 1) adjustment of needs outside equivalence scales, 2) adjustment of typical equivalence scales and 3) construction of a separate equivalence scale (the two last ones are closely related). All three options are explored in different studies. We briefly illustrate each choice.

Adjustment of needs could be dealt by valuation and needs' definition, rather than modification of equivalence scales. Such approach is, for example, suggested by Callan and Keane (2009) study, which proposes to value the monetary value only of educational studies higher than compulsory education. The compulsory education here is seen as the indication of basic needs, and therefore, not improving the relative well-being. The non-cash benefit valuation for the purpose of welfare comparisons concerns only what surpasses the minimum level. Once this additional welfare improving value is identified and added to the income list, the total household income is equivalised using the typical equivalence scale.

The second approach suggests the non-cash needs adjustment by a transformation of the typical equivalence scales. The adjusted scale, in this case, would be used for equivalisation of the final list of household economic resources. As an example, Klavus (1999) study proposes to estimate non-cash needs (i.e. of being ill) associated costs from the consumption micro data using econometric methods. Then, the non-cash needs estimated coefficients are added to a selected typical equivalence scale schedule. In this case, the previously mentioned



EU scale is adjusted by including an additional (0.4) weight per each chronically ill household member.

The third strand of research (i.e. Garfinkel et al., 2006; Smeeding et al., 1993) proposes a non-cash needs adjustment via a separate equivalence scale, and indicates two main arguments for such a choice selection: non-existence of economies of scales and equal distribution of household resources. These two studies thereby suggest using per capita division of non-cash benefits (i.e. health care, education and housing), followed by allocation of the obtained per capita measures solely to the entitled individual members. The final household income, to be used in welfare comparisons, is then equal to the sum of equivalent disposable cash income and per capita noncash income. This approach, however, only focuses on the economies of scales and does not account for differences in needs between for instance ill and healthy people.

Aaberge and Langorgen (2006) use a separate, non-cash needs equivalence scale to equivalise the allocated non-cash benefit values. Differently to the above two studies, this research proposes the weighted aggregation of the final equivalence scale, incorporating both the cash and the non-cash needs adjusted scales. In that respect, it is similar to Klavus (1999) approach. The Aaberge and Langorgen (2006) research also relaxes the assumption that economies of scales are not present in the consumption of non-cash benefits. Among diverse local public services analysed in this study, social services are assumed to be pure public (household) good, and care for the elderly and disabled is assumed to be provided as a mixture of public and private good. The remaining services are treated as private goods.

We review different propositions of adjusted equivalence scales in more details in the next section.

#### **4. Review of existing approaches**

In this section, we review the major approaches on how to deal with the needs adjustment for including public services in the income concept. This means that studies that focus on needs adjustment only, like (Jones & O'Donnell, 1995; Zaidi & Burchardt, 2005) are not included here. Table 2 presents a review of seven studies in the non-cash incomes inclusion literature.

We focus on studies, which represent significantly different approaches in 1) services covered, 2) data used, 3) value imputation and allocation procedures, 4) underlying needs definition, and 5) the construction outline of the adjusted equivalence scale. In the last column of Table 1, we summarize the resulting distributional findings, which reflect the implemented methodological choices.

#### **Countries and policies**

The reviewed studies vary in the country coverage. The country cases include Norway, Finland, Ireland and the US, with the latter three studies exclusively focused on the national public healthcare programmes. The study on Norway analyses distributional patterns of all local level public expenditures, and therefore goes beyond the scope of public social services (e.g. administration costs and public infrastructure are also covered). The cross-country comparisons cover selected OECD/EU members, ranging from five EU members in Paulus et

al. (2010) to 10 OECD countries in Garfinkel et al. (2006). Here, coverage of public services included health care, education and housing – the accepted choice in all the studies.

Overall, among all seven studies, Aaberge et al. (2010) research is an “un-traditional” step into the analysis of (only) local level services, whereas the rest studies analyse national programmes. Furthermore, two studies explore distributional impacts of in-kind services explicitly in relation to national tax and benefits structures: Paulus et al. (2010) in relation to direct taxes, contributions and other monetary benefits (via the use of microsimulation model EUROMOD) and Garfinkel et al. (2006) in relation to indirect taxes (based on survey observations and imputations from government aggregates).

## Data

The selected databases closely reflect the choice of included public services. Aaberge et al. (2010) study uses the highly detailed administrative data, while other researchers rely on household surveys plus external, and mainly OECD, information on aggregate public spending. Regarding the level of details, studies focused on one public service (i.e. healthcare in the selected studies) tend to rely on detailed health care use surveys rather than general population or household income surveys, as in the cross-country comparisons.

Furthermore, aside the richness of details, the used administrative records in Aaberge et al. (2010) study are the most up to date information source. These refer to 2007 information, whereas the other most recent studies utilise “older” data. Paulus et al.(2010) study is based on EUROMOD underlying micro-datasets, mainly due to comparability reasons and the aim to explore cumulative effects of non-cash and cash transfers, plus direct taxes and contributions. Callan & Keane (2009) rely on the household survey for the year 2000.

## Valuation and allocation

Most of the studies tend to use aggregate government spending as the first best option to impute the value of public services. Thereby, the production cost approach dominates the valuation step. Certain differences between studies though exist: most choose to vary aggregate amounts by population sub-groups (e.g. by age or municipality), some impute only the share of amounts believed to reflect adjustment for the basic needs (i.e. Callan & Keane, 2009), some suggest imputation of the value based both on the production costs and actual service utilisation (Klavus, 1999). Overall, one observation emerges: if health care and education, dependent on the underlying data, are most often valued by the production cost approach, the value of public housing is usually established in line with market price observations of the “rental equivalence” (i.e. Paulus et al., 2010).

The allocation methods are more divergent by service type in comparison to valuation. The allocation of health care value is most often conducted by the (risk-related) insurance approach. The value of education services, on the other hand, is mainly distributed by the actual use approach. The included examples on imputation of public housing refer to the reliance on the actual use approach too. Some services explore mixed approaches or alternative valuation and allocation methods.

## Needs

The choices made in valuation and allocation steps are partially driven by the way the underlying non-cash needs are defined (as in Callan & Keane (2009)). For this reason, we explicitly trace needs' definition in all selected studies. In some studies (Garfinkel et al., 2006; Smeeding et al., 1993) the non-cash needs are not specified. The remaining studies tend to define non-cash needs in relation to observed (minimum) public expenditures. The exception is Klavus (1999), where non-cash needs are expressed in relation to health status and other individual and household characteristics. This difference could be linked to the used databases, as few surveys have extensive enough information to comprehensively capture needs driven utilization of public services (as is the case in Klavus (1999) study).

Among the studies with needs defined in relation to public spending, the emerging and current opinion points to the use of certain minimum amounts to reflect society set standards for a certain type of service (Aaberge et al., 2010; Callan & Keane, 2009; Paulus et al., 2010). One could also notice some degree of "uncertainty" regarding needs definitions and their influence on the distributional outcomes. For this reason, a few studies employ alternative needs definitions, mainly as a sensitivity test (Paulus et al., 2010; Radner, 1997).

The way needs are defined influence researchers' choices in the final adjustment step too, at least to the extent whether the adjustment is necessary or not. Generally, as we observe from the Table 2, the higher attention paid to the non-cash needs identification also implies an attempt to use a more comprehensive needs adjustment technique.

## Needs adjustment via equivalence scales

In practice, three major approaches are found in the reviewed studies: non-adjustment (Garfinkel et al., 2006), adjustment via equivalence scales and adjustment (several studies) in the valuation step (Callan & Keane, 2009). Among those studies using adjustment via equivalence scales, approaches diversify further on.

Some studies choose to construct one equivalence scale, that unites both the typical equivalence scale and the adjusted equivalence scale (e.g. Aaberge et al., 2010). Other studies, modify the typical equivalence scale by adding estimates on non-cash needs related weights (Klavus, 1999). Third studies propose a separate equivalisation of non-cash and cash incomes (Smeeding et al., 1993). Differences in approaches are subject to various reasons, among them are all of the fore-mentioned issues: included policies, data use, needs definition, implemented choices in the valuation and allocation steps.

Furthermore, as we briefly present in the Table 2, economies of scales, - one of the main rationales in application of the typical equivalence scales<sup>6</sup> - play a significant role in some of the adjustment related choices. The rationale of having no economies of scales is the driving factor in Smeeding et al. (1993) suggestion to treat non-cash incomes on per capita basis and only then add them to the equivalised income list. Similarly, Aaberge et al. (2010) refer to local public services as private goods. Nevertheless, economies of scales in non-cash resources are present to the degree, that the equivalence scale for cash income accounts for

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<sup>6</sup> The equal intra-household distribution of resources is in practice assumed in all discussed studies, mainly due to data limitation to implement any other alternative assumption.

economies of scale (due to the weighed aggregation of typical and adjusted scales). Many other researches implicitly assume (at least some) presence of economies of scales. This is mainly done by the application of typical or somewhat modified cash equivalence scales.

### **Distributional findings**

With such a diversity of datasets, methods and adjustment approaches, one would expect miscellaneous distributional findings. Beyond the level of details, though, the studies complement each other in different dimensions and highlight one message: inclusion of non-cash benefits implies decreasing poverty and narrowing inequality with the size (and potentially direction) of these distributional effects dependent on 1) the method of identification and adjustment of needs, 2) valuation and allocation of imputed values, as well as 3) the non-cash benefits significance within the analysed country's national tax and benefit structure.

A cautious note should be also made: the outlined results should be interpreted given the scope of conducted analyses. Namely, the distributional results reflect the selection of countries and thus the design of their national systems. The results are also highly dependent on the set of included services: none of the studies attempt to cover all types of non-cash expenditures, as for example indicated in the Table 1. The distributional results are also dependent on the choice of the applied typical equivalence scales.

Table 2: Review of adjusted scales

Study	Country & services	Data	Valuation & allocation	NC* needs definition	NC needs adjustment via equivalence scales	Distributional findings
Aaerge et al. (2010)	Norway; local public spending	Admin. registers (2007): local government accounts, geographic, household & community info	Valuation: production cost approach, amounts varied at municipal level.; Allocation: to target groups, based on proportions of minimum expenditures	Needs = minimum expenditures per service specific target group	Adjusted eq. scale = a weighted sum of a typical eq. (the EU) scale & NC needs specific eq. scale; The latter one = a function of the local government minimum spending; No economies of scales in NC inc.	Needs' adjustment offsets ~ half of the inequality reduction & some of the poverty decrease
Paulus et al.(2010)	5 EU members; health care, education, public housing	The EUROMOD input micro-data** (2002 to 2005), & OECD information on non-cash aggregates	Valuation: production cost & value of "rental equivalence". Allocation: 1) education by actual use approach; 2) health care by risk-related insurance value approach 3) public housing by actual use approach	Scenario 1) Needs= compulsory education; Scenario 2) Needs= all education; Overall needs= mean public spending	3 alternative eq. scales used. Baseline: the EU scale; Scenario 1 and 2: needs' definition adjusted eq. scales. No economies of scales in NC inc.	Lower valued needs = larger fall in inequality; Higher valued needs = smaller fall in inequality & possible rise in inequality
Callan & Keane (2009)	Ireland; health care education	Household survey: Living in Ireland (2000)	NC needs adjustment by valuation of services that surpass basic needs. Valuation: 1) health care = medical card's production value; 2) education = non-compulsory education's production value. Allocation: actual use approach	Needs = society standards on basic needs (i.e. compulsory education, medical card as a means tested benefit)	No needs adjustment via eq. scales (see valuation step); Total income (inclusive of NC incomes) is equivalised using the EU scale. Assumed economies of scales in NC inc.	Prop-poor distributional effects of both healthcare & education services
Garfinkel, Rainwater, & Smeeding (2006)	10 OECD countries; education ***, health care (& indirect taxes)	Luxembourg Income study (2002), plus information on NC aggregates from OECD and other sources	Valuation : production cost per age group; Allocation: insurance approach for healthcare and actual use (based on age) for education	Not discussed	No needs adjustment; The applied typical eq. sale is the square root of the household's size – therefore, assuming economies of scales in NC inc.	Inclusion of NC incomes reduces inequality within and across countries
Klavus	Finland;	Finnish Health	Valuation: production (unit)	Needs = health	2 adjustment alternatives, based	Distributional

Study	Country & services	Data	Valuation & allocation	NC* needs definition	NC needs adjustment via equivalence scales	Distributional findings
(1999)	health care	Care Survey (1987)	cost in combination with utilization data; Allocation: insurance and actual use approaches	status & other features of household composition (age, # of people)	on estimations with health care use data. 1) Adults $w=1$ ; elderly $w=0.45$ ; chronically ill $w=0.4$ . 2) the adjusted EU scale, plus for chronically ill $w=0.4$ . Assumed economies of scales.	effects depend on the share of the NC transfers in full income
Radner (1997)	The US; Medicare (health care) program	The Current Population Survey (1993, March)	Valuation: production cost (mean government expenditure per recipient by state & risk class); Allocation: actual use.	Alternative definitions; generally, needs = government expenses on Medicare	Modification of the typical eq. scale (US poverty thresholds based). Adjusted scale = ratio of cash needs + (half) the NC needs in Medicare (& linked to the reference hh). Needs adjustment only for recipients; Assumed economies of scales.	If no NC needs adjustment = the economic status of the elderly is over-estimated; The size of over-statement is not precisely known
Smeeding et al. (1993)	7 OECD countries; education ***, health care, imputed rent	LIS, plus noncash expenditure aggregates	Valuation: government production cost (education and health care) and market value (housing - based on rates of return on investment) Allocation: actual use in combination with insurance approach (country dependent)	Not discussed	NC incomes equivalised on per capita basis & added to equivalised cash incomes; Thus, no economies of scales for NC incomes. Typical eq. scale applied: the 1 <sup>st</sup> adult $w=1$ ; each additional adult $w=0.4$ ; child $w=0.3$ .	Non-cash benefits have strong equalizing impacts in all studied countries

Notes:

\* NC refers to non-cash (incomes or needs).

\*\* EUROMOD is the EU tax-benefit microsimulation model. The underlying national datasets are: the EU-SILC (Belgium), German Socio-Economic Panel (Germany), Household Budget Survey (Greece), National Italian SILC (Italy), Family Resources Survey (the UK);

\*\*\* Tertiary education is excluded due to data constraints.

Source: own presentation

## 5. Conclusion

This methodological review paper brings together the existing literature on the non-cash incomes inclusion and its consequences for needs adjustment. It shows that the issue is an important one, though far from settled.

First, it brings forward and structures arguments provided as rationales of the non-cash needs adjustment via equivalence scales. Specifically, it highlights five major issues essential to the non-cash needs adjustment: 1) consistency between the list of resources and associated needs, 2) economies of scales in cash and non-cash resources, 3) intra-household distribution of resources, 4) resource substitution and 5) coherency among four (Section 2 described) inclusion steps. All these issues are important for consideration of why, what and how non-cash needs should be adjusted for.

Second, it explores the implications of diversity in non-cash needs definition for the methodological choices underlying all inclusion steps. In particular, as we highlight in Section 4, non-cash needs acknowledgment and identification method is influential with respect to the equivalence scale adjustment choice.

Third, we structure existing approaches on the non-cash needs adjustment. For this purpose, we provide a comparison of the existing methods along the following lines: what policies are mainly considered up to date; what data are they based upon; what is the relation between data and methodological choices; what is the link between valuation, allocation and needs adjustment steps; what are the emerging (consensus) approaches with respect to inclusion of major public services, such as healthcare and education; how are adjusted equivalence scales constructed; how the adjusted equivalence scales treat differences between cash and non-cash resources, as with respect to existence of economies of scales; what are the non-cash needs adjustment related distributional effects.

One of our major observations is that despite diversity of the employed methods, one coherent message emerges: inclusion of public services implies decreasing poverty and narrowing inequality. Nevertheless, the size and the direction of such distributional effects is dependent on the non-cash need adjustment method, valuation and allocation of imputed monetary amounts, as well as included non-cash benefits' significance within the analysed country's national tax and benefit structure. Overall, one could claim that non-cash needs' adjustment based inclusion of in-kind benefits should reveal lower inequality prevalence in the countries. Nevertheless, here we make a cautious note that these findings are dependent on yet narrowly defined needs and included services. Further research is certainly welcome on this issue.

## 6. Implications for inclusion of Flemish public services

What are the potential implications of this review for the research considering regional public service analysis in a region as Flanders? We highlight a few major considerations.

First, one should evaluate what public services are provided on the regional level and what information (production cost or market value based) would be available on the imputation of their monetary value. Second, how important are these in-kind regional provisions with respect to household obtained cash resources? As provided in the Annex, public spending on social services represent around 14% of the GDP on the national level. How are these

expenses distributed on the regional level? Third, is it possible to cover all in-kind benefits or is selection of a few a relevant choice? Fourth, what data is available to identify service utilization and needs identification? Fifth, what method should be most appropriate given data availability and overall research aims? Sixth, could tools such as microsimulation models be applied for a more comprehensive accounting of diverse household resources, as well as direct and indirect taxation influences, as in the reviewed study of Paulus et al. (2010)? This list is not exhaustive and rather serves as indication of potential methodological questions, to which some answers and review of debates are provided in this study.

For example, based on this paper's methodological review, one could consider that in the case of cross-regional research, inclusive Flanders, the most comprehensive and pragmatic approach of needs adjustment, especially given potential data limitations, might point to Paulus et al. (2010) study implemented choices. Policies considered in this study, as healthcare, education and housing, are regional/community competences in the Flanders too. The list of covered services could extend to inclusion of childcare, housing, public transport services or long term care. All of these services provide with important economic resources to Flemish households, but are not yet accounted for in the existing distributional studies.

If relevant administrative records would be made available, one could also consider to replicate the Aaberge et al (2010) approach to account for distributional influence of all Flemish competencies. Such a distributional analysis would be a significant step forward in describing Flemish poverty and inequality profile, given the influence of all public spending categories. Furthermore, it could also provide and/or adjust existing empirical evidence on the municipal differences in household welfare levels within the Flanders.

Finally, as we extensively illustrate, one should be cautious and explicit with respect to methodological choices undertaken in the inclusion process as well these choices' impact on the final distributional results and their interpretation.



## References

- Aaberge, R., Bhuller, M., Langørgen, A., & Mogstad, M. (2010). The distributional impact of public services when needs differ. *Journal of Public Economics, In Press, Corrected Proof*.
- Aaberge, R., & Langørgen, A. (2006). Measuring the Benefits From Public Services: the Effects of Local Government Spending on The Distribution of Income in Norway. *Review of Income and Wealth*, 52(1), 61-83.
- Aaberge, R., Langørgen, A., & Lindgren, P. (2010). *The Impact of Basic Public Services on the Distribution of Income in European Countries*. Paper presented at the 2010 EU-SILC International Conference.
- Antoninis, M., & Tsakoglou, P. (2001). Who benefits from public education in Greece? Evidence and policy implications. *Education Economics*, 9(2), 197-222.
- Atkinson, A. B. (2005). *Atkinson Review: Final Report: Measurement of government output and productivity for the National Accounts*: Palgrave Macmillan, Basingstoke.
- Atkinson, A. B., & Bourguignon, F. (1990). The design of direct taxation and family benefits. *Journal of Public Economics*, 41(1), 3-29.
- Binh, T. N., & Whiteford, P. (1990). Household Equivalence Scales: New Australian Estimates from the 1984 Household Expenditure Survey\*. *Economic Record*, 66(3), 221-234.
- Blackorby, C., & Donaldson, D. (1993). Adult-equivalence scales and the economic implementation of interpersonal comparisons of well-being. *Social Choice and Welfare*, 10(4), 335-361.
- Buhmann, B., Rainwater, L., Schmaus, G., & Smeeding, T. M. (1988). Equivalence scales, well-being, inequality, and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study(LIS) database. *Review of Income and Wealth*, 34(2), 115-142.
- Callan, T., & Keane, C. (2009). Non-cash benefits and the distribution of economic welfare. *The Economic and Social Review*, 40(1), 49-71.
- Coulter, F. A. E., Cowell, F. A., & Jenkins, S. P. (1992). Differences In Needs And Assessment Of Income Distributions. *Bulletin of Economic Research*, 44(2), 77-124.
- Cowell, F. A., & Mercader-Prats, M. (1999). Equivalence scales and inequality, in "Income Inequality Measurement: from Theory to Practice"(J. Silber, Ed.): Kluwer Academic, Dordrecht.
- Ferrer-i-Carbonell, A., & Van Praag, B. M. S. (2002). The subjective costs of health losses due to chronic diseases. An alternative model for monetary appraisal. *Health Economics*, 11(8), 709-722.
- Garfinkel, I., Rainwater, L., & Smeeding, T. M. (2006). A re-examination of welfare states and inequality in rich nations: How in-kind transfers and indirect taxes change the story. *Journal of Policy Analysis and Management*, 25(4), 897-919.
- Jenkins, S. P., & Lambert, P. J. (1993). Ranking Income Distributions When Need Differ. *Review of Income & Wealth*, 39(4), 337-356.
- Jones, A., & O'Donnell, O. (1995). Equivalence scales and the costs of disability. *Journal of Public Economics*, 56(2), 273-289.
- Klavus, J. (1999). Health care and economic well-being: estimating equivalence scales for public health care utilization. *Health Economics*, 8(7), 613-625.

- Langorgen, A. (2004). Needs, economic constraints, and the distribution of public home-care. *Applied Economics*, 36(5), 485-496.
- Lewis, C. E., Fein, R., & Mechanic, D. (1976). *A right to health: The problem of access to primary medical care; A right to health: The problem of access to primary medical care*: John Wiley & Sons.
- Marical, F., D'Ercole, M. M., Vaalavuo, M., & Verbist, G. (2006). Publicly-provided Services and the Distribution of Resources. *OECD Social, Employment and Migration Working Papers, DELSA/ELSA/WD/SEM(2006)14*.
- Muellbauer, J., & Van De Ven, J. (2004). Estimating equivalence scales for tax and benefits systems. *DISCUSSION PAPERS-NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH*.
- Nelson, J. A. (1993). Household Equivalence Scales: Theory versus Policy? *Journal of Labor Economics*, 11(3), 471-493.
- Paulus, A., Sutherland, H., & Tsakloglou, P. (2010). The Distributional Impact of in Kind Public Benefits in European Countries. *Journal of Policy Analysis and Management*, 29(2), 243-266.
- Radner, D. B. (1992). Economic Status of the Aged, The. *Social Security Bulletin*, 55(3), 3-23.
- Radner, D. B. (1997). Noncash income, equivalence scales, and the measurement of economic well-being. *Review of Income and Wealth*, 43(1), 71-88.
- Rander, D. B. (1997). Noncash income, equivalence scales, and the measurement of economic well-being. *Review of Income and Wealth*, 43(1), 71-88.
- Smeeding, T. M. (1982). *Alternative methods for valuing selected in-kind transfer benefits and measuring their effect on poverty*: The US Government printing office. .
- Smeeding, T. M., Saunders, P., Coder, J., Jenkins, S., Fritzell, J., Hagenaaars, A. J. M., et al. (1993). Poverty, Inequality, And Family Living Standards Impacts Across Seven Nations: The Effect Of Noncash Subsidies For Health, Education And Housing. *Review of Income and Wealth*, 39(3), 229-256.
- Stewart, M. B. (2009). The estimation of pensioner equivalence scales using subjective data. *Review of Income and Wealth*, 55(4), 907-929.
- Zaidi, A., & Burchardt, T. (2005). Comparing Incomes when Needs Differ: Equalization for the Extra Costs of Disability in the UK. *Review of Income and Wealth*, 51(1), 89-114.

### Annex: Cash and in-kind social expenditures

*Table: Social cash and in-kind benefits in selected EU countries and the US*

Percentage of GDP, 2005

	Total cash	Total in-kind	Total in-kind, by categories		
			Health	Education	Other
SVK	10.2	9.6	5.3	3.5	0.8
POL	15.7	9.7	4.3	4.9	0.5
GRC	13.4	10.5	5.6	4.0	0.9
ESP	13.1	10.9	5.8	3.7	1.4
ITA	16.7	11.7	6.8	4.0	0.9
CHE	11.4	11.7	6.3	4.0	1.4
IRL	8.4	12.0	6.5	4.8	0.7
HUN	13.6	12.8	6.0	4.7	2.1
AUT	18.4	13.1	6.8	5.0	1.3
NLD	11.1	13.3	6.0	5.1	2.2
DEU	15.9	13.4	7.7	4.1	1.6
GBR	10.3	14.0	7.0	5.0	2.1
BEL	16.2	14.4	7.3	5.4	1.7
FRA	17.5	15.0	7.8	5.0	2.1
FIN	15.3	15.6	6.2	6.0	3.5
DNK	13.6	18.6	5.9	7.6	5.2
SWE	14.5	19.6	6.8	6.4	6.4
USA	8.0	12.6	7.0	4.8	0.9

*Note: the EU countries are ranked based on total in-kind expenditures*

*Source: OECD Stat. Extracts (September, 2010)*