LIS
Working Paper Series

No. 912

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December 2025

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in Luxembourg

Luxembourg Income Study (LIS), asbl

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Abstract: This paper aims to take stock of the different conceptual elements of consumption as defined and applied in emerging and advanced countries, and data collection efforts based on household surveys. This work diverges from the Eurostat-OECD EG and other country-specific analyses that focus on consumption from a national accounts' perspective (OECD 2024; Zwijnenburg et al. 2021). In doing so, we contribute to the discussion of how to guide statistical authorities in building a consumption-based economic well-being measure at the household level. The purpose of this paper is twofold: (1) to further clarify the conceptual framework for defining a comparable consumption-based well-being concept; and (2) to provide an empirical, descriptive, distributional analysis by consumption components and demographic groups across low, middle and high-income countries. This comparative work is based on nine country case studies: Mali, Laos, Palestine, Peru, Georgia, Italy, France, the United Kingdom (U.K.), and the United States (U.S.). We first provide an update of Mancini and Vecchi (2023) concerning the aggregation plan and variable detail in a potential Luxembourg Consumption Study database and provide comparisons to the OECD ICW framework (2013) and COICOPs 2018 definitions of consumption components. The empirical section first presents the core differences in the analyzed surveys and then provides a distributional analysis. To the best of our knowledge, this is the first analysis of consumption patterns across low, middle and high-income countries as a set. We conclude that there are challenges concerning what to include or exclude in consumption, for example, with regard to what to consider as durables, shelter maintenance and repairs, and accounting for insurance. In addition, we discuss the major considerations as to whether health and education expenditures should be part of an economic well-being measure. We also find that data for own-produced goods for consumption are often collected for emerging economies, but they are systematically missing in expenditure surveys conducted by high-income countries. The importance of equivalence scales is discussed with reference to major differences in consumption inequality across countries. Finally, the decomposition of the Gini coefficient highlights how the structure of consumption and its impact on inequality shifts with economic development, with basic needs driving inequality in poorer countries and more diverse consumption patterns driving it in wealthier nations.

JEL code: D3 (distribution), E2 (consumption), I3 (Welfare, Well-being, Poverty)

I. Introduction

In 2022, the Luxembourg Income Study (LIS) started to explore the feasibility of creating a Luxembourg Consumption Study (LCS) database. The aim of such exploration was to assess the feasibility of extending comparative distributional analysis by using a consumption-based well-being measure throughout high to middle and low-income countries. Such a measure would extend the potential joint distributional study of income, consumption and wealth immensely. For this feasibility study, Mancini and Vecchi (2023) were contracted to identify current "best practices" in constructing a consumption-based well-being indicator. Building on Mancini and Vecchi's (2023) contribution, this paper further elaborates on a cross-nationally comparable concept of consumption-based well-being.

Over the past several decades, many influential cross-national comparisons of household economic well-being have been undertaken based on income as a proxy for economic well-being (e.g., Atkinson et al. 1995; OECD 2008, 2015, 2019; Smeeding et. al 1990). But it has also long been argued that the most direct measure of material well-being and living standards is consumption (see for example, Deaton and Zaidi 2002). However, various definitions of consumption have been used in the large literature published on consumption (see Attanasio et al. 2014; Cutler and Katz 1992; Heathcote et al. 2010; Heshmati and Rudolf 2014 and others cited in Fisher et al. 2015 and Garner et al. 2023). While developing and emerging economies have long preferred consumption to income for economic well-being measurement (Deaton and Zaidi 2002; Grosh and Glewwe 2000; Grosh and Munoz 1996; Hentschel and Lanjouw 1996; Lanjouw and Lanjouw 2001; Lanjouw 2012; Ravallion 2003, 2016), it was not until the 2000s that intense efforts were launched to promote the production of a consumption measure that is consistently defined within and across countries for both emerging and advanced economies. The present study represents a continuation of that effort.

Early guidelines were produced by the ILO (2003, 2004). An additional, impactful, contribution has been the release in 2009 of the Stiglitz-Sen-Fitoussi report which identified household income, consumption, and wealth as three key components of household well-being. The report promoted the integration of income, consumption, and wealth, and simultaneously the necessity to boost cross-national comparability of these three dimensions of economic well-being. It also acknowledged the importance of broadening such measures to incorporate non-market activities, including home production, noting that "tracking the production of such home-produced goods is important to assess consumption levels of households" within and across countries. However, the report warns that measures based on income, consumption, and wealth alone – whether considered individually or jointly – are insufficient to capture economic well-being. For example, consuming the same level of goods and services but working less (having more leisure) would be expected to result in an increase in one's level of living. Thus, when data are available, the report recommends that "comparisons of living standards over time or across countries need to take into account the amount of leisure that people enjoy" (p. 14). One such study that considers both consumption and leisure was conducted by Han et al. (2020) using U.S. Consumer Expenditure Survey and time use survey data. The authors report that including both leisure and consumption, as opposed to just consumption, results in lower measured inequality.

Building on the Stiglitz et al. (2009) report, the OECD launched the Expert Group on the Joint Distribution of Income, Consumption and Wealth at the Micro Level (EG ICW) to compile measures of economic well-being across household groups (see Balestra and Oehler 2023), and the OECD-Eurostat Expert Group on Disparities in National Accounts (EG DNA) (see OECD 2024; Zwijnenburg et al. 2021).

Other related work has been conducted by a U.S. National Academy of Sciences Panel with recommendations to build an integrated system of data and statistics on household income, consumption, and wealth (NAS 2024).

While the OECD and Eurostat have made much progress, challenges associated with producing comparable measures remain (see OECD 2023). Balestra and Oehler (2023) note that although there is a framework for comparability, in practice, it is not yet possible to produce a consumption measure that matches this framework. For example, OECD countries tend to refrain from collecting home production along with consumption expenditures. In contrast, the first version of the Luxembourg Consumption Study (LCS) proposed by Mancini and Vecchi (2023) recommends a harmonized measure of consumption across countries that incorporates home production. However, Mancini and Vecchi (2023) do not mention accounting for leisure in evaluating comparisons of living standards across countries. As there is little experience from cross-national studies on the inclusion of leisure in the analyses, this paper will similarly focus on applying a more conventional *economic* or material measure of well-being, keeping in mind that such efforts should remain on the agenda for cross-national research.

Given the importance of consumption in assessing the economic well-being of households and their members, much research has focused on the collection of cross-national household survey data for the development of comparable measures of consumption and consumption expenditures (see Sierminska and Garner 2002 and early examples cited by these authors), developing frameworks for comparability across countries (ILO 2003; Mancini and Vecchi 2022, 2023; OECD 2013, 2024), and developing measures of consumption for economic well-being measurement. The recent work of the OECD (Balestra and Oehler 2023) has focused on advanced countries, while other research has examined developing countries (Mancini and Vecchi 2022). Both sets of researchers refer to the challenges of collecting and producing accurate consumption estimates. Both agree on a comparable definition of consumption: consumption is defined as the value of goods and services consumed and includes those purchased in the market and from other households, produced at home, received as in-kind transfers, and as the flow of services from owner-occupied housing and from durables.

This paper aims to take stock of the different conceptual elements of consumption as defined and applied in emerging and advanced countries, and data collection efforts based on household surveys. We build upon work of the OECD ICW expert group (2013, Balestra and Oehler (2023)) and most recent definitions of consumption components as defined in UNSD (2023) for the COICOPs 2018 revision. This work is in contrast to that of the Eurostat-OECD EG and country-specific work that focus on consumption from a national accounts' perspective (OECD 2024; Zwijnenburg et al. 2021).[1] In doing so, we contribute to the discussion of how to guide statistical authorities in building a consumption-based economic well-being measure at the household level. However, while we do not focus on national accounts in particular, this discussion can serve as an input into the broader Eurostat-OECD EG work.

The purpose of this paper is twofold: (1) to deeply dive in further refining the conceptual framework for defining a comparable consumption-based well-being concept; and (2) to provide an empirical

[1] As an example of how household survey data, in combination with auxiliary data, are being used to produce national accounts defined consumption, see Garner et al. (2024a,b). For an example of how household survey data are being used to produce the joint distribution of consistently defined national accounts consumption and income to produce savings, see Gindelsky and Martin (2024).

descriptive distributional analysis by components and demographic groups across low-, middle-, and high-income countries. We contrast the advanced countries perspective to the conceptually different approach in constructing household-based consumption aggregates in emerging countries. This comparative work is based on nine country case studies: Mali, Laos, Palestine, Peru, Georgia, Italy, France, the United Kingdom (U.K.), and the United States (U.S.).

Following a brief overview of the feasibility study by Mancini and Vecchi (2023), we synthesize the literature on consumption-based measures of economic well-being, drawing on evidence from advanced and emerging economies. We then provide an update to the aggregation plan and variable detail in a future LCS database. An empirical section first presents the core differences in the analyzed surveys and then provides distributional analyses. A final section summarizes the discussion.

Our analysis reveals substantial cross-country and within-country variation in the structure and distribution of consumption. First, the measurement of consumption is highly sensitive to the choice of the equivalence scale. Per-capita and square-root adjustments produce notably different patterns in the representation of household types across the consumption distribution, particularly for households with children and larger family structures. This sensitivity is especially pronounced in low- and lower-middle-income countries but remains relevant even in high-income settings.

In many countries, housing is the single most important consumption category rather than the second largest. Cross-country comparisons therefore require consistent information on the availability and treatment of imputed rent, i.e., rental-equivalent valuations of housing services consumed by owner-occupiers. Because imputed rent is not yet available for Laos and the U.K., comparisons of housing shares across our sample are biased and need to be interpreted with caution.

Third, constructing a second consumption aggregate that mirrors the COICOP framework reveals that the inclusion of durables and health expenditures has substantial effects in countries such as Laos, the U.S., and the U.K., and more modest effects in Peru, Georgia, and Italy, highlighting how differences in survey detail can influence measured consumption.

Fourth, the inequality decomposition demonstrates that the components driving consumption inequality differ systematically across the countries. In high-income countries, inequality is shaped primarily by housing, restaurants and accommodation, and recreation, sport, and culture. In upper-middle-income countries such as Georgia and Peru, food remains important, but transport, information and communication, and education also play significant roles. In lower-income and lower-middle-income countries, contributions to inequality are more evenly distributed across food, housing, and transport. Elasticities above one for categories such as education indicate luxury-type behavior: consumption of these components rises more than proportionally with total consumption growth. The exceptionally high education elasticities observed in Georgia and Mali warrant further investigation into structural and institutional factors driving this relationship, as well as into the broader comparability of education across countries.

II. The Luxembourg Consumption Study (LCS) – main elements and practices

II.1) The feasibility study by Mancini and Vecchi

In 2022, the Luxembourg Income Study (LIS) initiated an exploration into the creation of a Luxembourg Consumption Study (LCS) database. LIS contracted researchers Giulia Mancini and Giovanni Vecchi to carry out a feasibility study. The primary goal of the study, conducted by Mancini and Vecchi (2023), was to identify the current "best practices" in constructing a consumption measure to reflect household economic well-being. The initial phase of the LCS feasibility study focused on assessing the feasibility of compiling household-level harmonized consumption data that allows for comparisons across low, middle, and high-income countries.

Mancini and Vecchi suggested that the methodologies used to estimate consumption *do not* need *to be* identical, as long as they achieve the same goal, conceptually. Therefore, the authors adopted the concept of *operational comparability.* One of the main examples of *operational comparability* in the LCS framework is the variation of methodological approaches to measuring the 'flow of services from owner occupied housing'. Some countries (e.g., Peru and the U.S.) directly ask the respondents to report the rent they would pay for their owner-occupied residence, or the rent they would charge if they rented it out; this method is referred to as reported rental equivalence. In other countries the amount is estimated using regression techniques to impute rents. In a further set of countries, an outside source, for example tax authorities, could provide an estimated rent for tax purposes. *Operational comparability* means that LIS is not standardizing the approach to estimate the 'flow of services from owner occupied housing' but instead documenting cross-national differences. It is expected that LCS database users will have a measure of the 'flow of services from owner-occupied housing' for their analyses for most countries.

The feasibility study by Mancini and Vecchi was structured into two broad phases. First, it outlined a conceptual and operational framework for constructing a household-level consumption aggregate, designed to be comparable across countries, by identifying its main components and defining an aggregation plan. Second, it provided an initial overview of countries and surveys. This phase aimed to address two main questions. The first concerned data availability, namely identifying potential surveys and assessing whether they contain the information necessary to construct a harmonized consumption-based well-being measure. The second concerned data quality, that is, whether the available data are sufficiently reliable and accurate to meet agreed international standards.

The study argued that, if both questions were answered in the affirmative for a sufficient number of surveys, the construction of an LCS database could begin. LIS would then establish criteria for inclusion in the LCS database, such as a low degree of missing values in consumption items, and ensuring the comparability of well-being measures and country-level representativeness, consistent with the guidelines used for the LIS and LWS databases (Neugschwender et al. 2024). Finally, Mancini and Vecchi introduced a scoring system designed to assess whether the sub-components of the consumption aggregate can be constructed across the different countries and surveys.

The conceptual framework by Mancini and Vecchi (2023) to construct an LCS consumption aggregate (CA) can be summarized as follows:

$$CA = x^{F} + x^{NFND} + \hat{x}^{DUR} + \hat{x}^{HOUS}$$

where:

x^F denotes the food consumption aggregate:

$$x^{FOOD} = x^P + x^O + x^{IK} + x^{FAFH}$$

x^P denotes purchased food.

x^O denotes own-produced food.

x^{IK} denotes food received in kind.

x^{FAFH} denotes food prepared away from home.

x^{NFND} denotes non-food non-durable expenditures, where 'lumpy' expenditures are excluded, and *j* refers to non-food non-durables:

$$x^{NFND} = \sum_{j \in J} x_j - x^{LUMPY}$$

$\hat{x}^{DUR}$ is the estimated consumption flow from durable goods, *k*:

$$\hat{x}^{DUR} = \sum_{k \in K} x_k^{CF}$$

$\hat{x}^{HOUS}$ denotes housing consumption:

$$\hat{x}^{HOUS} = \begin{cases} x_{\text{rent}} \text{ if renter} \\ x_{\text{imputed rent}} \text{ if non} - \text{renter} \end{cases}$$

Mancini and Vecchi (2023) raised some concerns regarding the construction of a comparable cross-country measure of economic well-being. These centered on assessing how changes in the definition of the consumption aggregate (for example, differences in the estimation of consumption flows for owner-occupied dwellings and durable goods) affect key poverty estimates, particularly poverty profiles. In response to these concerns, the authors carried out a sensitivity exercise using recent household surveys from one high-income country (Italy) and three less economically advanced countries: Bhutan, Malawi, and Peru. For each survey, three alternative consumption aggregates were constructed. Food and non-food non-durable expenditure components were computed in the same way for each version, while the housing and durables components were obtained using different methods. Table 1 summarizes the definitions of the aggregates computed at the household level.

<Insert Table 1 here>

Although the magnitude of poverty estimates varied with the adoption of different welfare indicators, the urban-rural rankings remained unchanged (with the exception of Italy, where the urban-rural difference was minimal in the first place). Poverty profiles based on additional household characteristics, such as gender, education, and employment status of the reference person of the household were also examined. In each case, the estimates indicated an overall robustness of poverty profiles to variations in the definition of the consumption aggregate. Further details are provided in the feasibility study available in the LIS Working Paper Series, No 911.

II.2) Setting up the LCS – a consumption-based measure of household economic well-being

Upon the completion of the LCS feasibility study conducted by Mancini and Vecchi (2023), a team of researchers associated with the LIS (co-authors on this paper) started to work on a pilot study for launching the Luxembourg Consumption Study (LCS) database. The initial task undertaken by the LIS team was the preparation of an LCS background note, which has been fully integrated into this paper. This document aimed to establish the conceptual and operational framework for the LCS database, building on the feasibility study as well as internationally recognized guidelines for creating comparable consumption aggregates. Multiple sources have been used to develop the LCS framework; these include those of the OECD (2013, 2024), Mancini and Vecchi (2022, 2023), Deaton and Zaidi (2002), the System of National Accounts (2008, 2025), and the latest version available of the *Classification of Individual Consumption According to Purpose* (COICOP) (UNSD, 2023) referring to the finalisation of the 2018 revision. This section sets out the conceptual and methodological framework for measuring household economic well-being, which is then used to build and implement the Luxembourg Consumption Study (LCS) with its focus on actual consumption.

Subsection II.2.a) introduces the main economic well-being indicators to be operationalised for the LCS. By specifying the fundamental conditions these measures must satisfy, the subsection sets the objectives for this exercise.

Subsection II.2.b) describes key points of measurement criteria common to all types of consumption, including the appropriate unit of analysis and population coverage, the choice of reference period and techniques for annualising expenditure and consumption data, the availability of classification detail for different consumption categories, and the adoption of the acquisition approach as the general basis for recording expenditure items for non-durable consumption. This section also discusses methodological procedures to adjust for differences between real and nominal consumption, as well as how to accurately compare households accounting for intra-annual inflation trends and spatial price variation.

Subsection II.2.c) delves deep into the conceptual and practical challenges that arise when extending consumption measures beyond simple household expenditures. It begins with a general discussion of the *final use period* – that is, the period in which goods and services are actually consumed or used. It then discusses how to assign monetary values to non-monetary consumption components such as the household production of services for own use, including the implicit rental value of owner-occupied dwellings, the consumption flow from durable goods, and unpaid domestic services, all of which can significantly affect well-being. It also considers the valuation of home-grown food, and how subsidies or rationed goods – such as publicly provided food or fuel distributed at below-market prices – enter into household budgets. Further, it considers issues related to maintenance and repair of shelter dwellings, valuation of insurance, and the treatment of health, education and extraordinary expenses. Altogether this section reunites the discussion on the challenges of building comparable consumption-based measures of well-being across low-, middle- and high-income countries.

Finally, subsection II.3) presents the proposed variable structure for the LCS, which translates these conceptual and measurement principles into a comprehensive list of variables for capturing, classifying, and analysing household consumption data.

II.2.a) Conceptual framework for the LCS

Main economic well-being measure. The main Consumption Aggregate (CA) in the LCS framework is *household consumption* that includes:[2]

- expenditures on goods and services purchased for final use by the household, including the value of the flow of services from housing, but excluding the purchase value of major durables (including vehicles) as classified in COICOP 2018;
- goods and services produced and consumed by the same household;
- the estimated or imputed value of barter transactions and goods and services received in kind, excluding the value of in-kind public/general health and education services.

Conditions to satisfy. The variable *household consumption* should satisfy three conditions. These conditions are consistent with those that underlie the OECD (2013, 2023) definition of household consumption. The *household consumption* variable should be:

1) comprehensive (it should cover all sub-components of consumption);
2) relevant (it should only include consumption of the household under analysis, that is, it should exclude expenditures on goods and services that are purchased for individuals outside the household, outlays for non-consumption such as income taxes and interests on loans, as well as outlays that represent investment (e.g., the purchase of capital goods and allocations to savings and investment accounts or dowry);
3) reflect consumption at market prices.

We acknowledge that this measure does not operationalise consumption fully in line with the OECD (2023) guidelines on income, consumption, and wealth, as it does not incorporate service flows from durable goods. This reflects current data limitations, notably the limited availability of information on durable possessions, initial purchase prices, and the year of purchase of durables, are required to construct the corresponding service flows for durables. To address this constraint, we propose an *extended household consumption* measure that is intended to incorporate durable service flows as such information becomes available. However, comparability will depend on the national detail provided in the source data. Hence, the LCS data team at LIS will need to take national-specific contexts into account when constructing consumption flow measures. A close exchange with the data producers will be very beneficial to improve the methodology and comparability of durable flows in the mid-term. However, at this stage, we do not regard the exclusion of durables and the flow of services from these as a major limitation, as Mancini and Vecchi (2023) show that including or excluding expenditures for the purchase of durables did not strongly affect the consumption aggregate. Furthermore, it is acknowledged that the condition of "relevant consumption" cannot be consistently met across all surveys, as information on expenditures beyond the respondent's own household unit is not always available. In such cases, a general note in the documentation will indicate this.

[2] On a general note, the measure includes household consumption and consumption expenditures, incurred within the country or abroad by members of the household during the reference period. This approach is adopted in the LCS pilot in order to reduce complexity and address the limited availability of such information in most countries.

II.2.b) Key points related to measurement

Reference unit and population. The different data sources foreseen for the LCS mostly agree on using the 'household' as the reference unit for data collection. A household is defined as either one individual or group of individuals who live together under the same housing arrangement and who jointly provide themselves with food and other essentials for living. The LCS household definition is essentially the same as that used when collecting the U.S. data, although the CE survey employed in our analysis does not use the term 'household' for data collection.[3] But it is slightly different from the household definition used for the LIS income data files: a household is defined as "all individuals in a household unit (typically defined as a single person or a group of persons living in one dwelling and sharing a budget."

For our study, the population is defined as all people living in private households who reside in the territory of a country. As noted by the OECD (2013), household membership is preferably determined based on a person's usual place of residence, with household members generally expected to live in the same country. In most countries' consumption and expenditure surveys, students living away from home are considered part of their parents' households. However, follow up questions might allow accounting for time spent not at the usual residence. By contrast, in the U.S. survey, students living away from their usual places of residence are considered separate data collection units.

Issue 1. *What is the appropriate reference unit for measuring consumption?*
Choice 1. *The reference unit is the household, defined as one individual or a group of individuals living together under the same housing arrangement.*

Issue 2. *What population should be covered when measuring consumption?*
Choice 2. *The population consists of all people living in private households who reside within the territory of the country.*

Reference period and annualization. For the LCS Framework, longer reference periods such as a full calendar year are preferred, as they better account for seasonal variation and capture infrequently purchased goods like durables. However, the reference period is defined in each country's household survey. For example, one country's survey could request daily expenditures to be recorded for a week while another country's survey could request expenditures be collected for the previous month, previous twelve months, or previous calendar year. It is common practice in survey designs to have a shorter collection period for food items (e.g., 14 days), longer periods for non-durable goods and services (e.g., one month) and even longer ones for durable goods (e.g., 12 months). In the case of vehicles, the period might be even expanded beyond an annual period (e.g., 3 years in Palestine). To ensure comparability, consumption expenditures should be annualized and expressed in current-

[3] According to the BLS (2024), the data collection unit is referred to as a consumer unit and is defined as: (1) all members of a particular housing unit who are related by blood, marriage, adoption, or some other legal arrangement, such as foster children; (2) a person living alone or sharing a household with others, or living as a roomer in a private home, lodging house, or in permanent living quarters in a hotel or motel, but who makes independent financial decisions; or (3) two or more unrelated persons living together who pool their income to make joint expenditure decisions. Financial independence is determined by spending behavior regarding the three major expense categories: housing, food, and other living expenses. To be considered financially independent, the respondent must provide at least two of the three major expenditure categories, either entirely or in part.

period currency values, using conversion factors corresponding to the survey reference period (weekly, monthly, quarterly, or biannual). It should be noted that annualizing short reference periods (e.g., three months) may overestimate consumption in specific categories, as households may purchase other goods and services in the remaining months, either within the same or a related aggregated category.

> ***Issue 3.*** *Should consumption expenditure amounts be expressed in a common reference period, and if so, which one?*
> ***Choice 3.*** *Yes, a common reference period is necessary. Expenditure amounts included in the consumption aggregate are annualized.*

Classification detail. The mode of data collection differs across countries and repeated cross-sections, with some surveys collecting highly detailed item-level diary data and others using broader expenditure categories in questionnaires. This poses two major challenges. First, some microdata values may not align precisely with the detailed COICOP categories and hence the LCS framework. In such cases where certain categories are not separable in the source data and therefore excluded from the more detailed categories, these issues do not affect the overall comparability of more aggregated results. Second, the classification structure used by the data provider may not allow for a clear distinction of the items which should be included in the consumption aggregate vs. the ones that should be excluded. This may limit comparability across countries but also households, as not all households will be affected equally by such classification inaccuracies. As will be further explained below, main examples refer to the separation of durables and maintenance and repair of the dwellings. Detailed information on such classification issues is expected to be provided in the respective survey documentation pages.

The acquisition approach. As per the ICW framework (OECD 2013), the LCS framework follows the "acquisition approach" for most goods and services. Under this approach, expenditures and information regarding goods and services reflect what is spent or obligated when the goods and/or services are acquired or when the household takes possession, regardless of whether the household has paid for them (payment approach) or whether they have been used (use approach). In practice, there are likely few differences among the three approaches for most of the consumption goods and services, mainly non-durables. The assumption does not hold for the purchase of capital goods like owned housing, consumer durables, and major renovations and repairs. These are expected to be used for more than a year and are not necessarily fully consumed immediately or within a fairly short period of time. For capital goods, it would be appropriate to use a 'flow of services' approach to account for consumption derived from these during a year. However, to account for purchases of capital goods (i.e., owned housing and durables), the purchase price and current value would, when available, be included in the LCS framework and data files and provided separately. However, in the current study, only the flow of service value for owner-occupied housing is included in our consumption measure; the flow of services from durables (including vehicles) is not.

> ***Issue 4.*** *What approach is to be used to value consumption?*
> ***Choice 4.*** *Consumption is valued as the expenditure amounts recorded in household surveys following the acquisition approach, with the exception of housing and durable goods. The flow of services is used for owned housing, and expenditures for durables are excluded.*

Real vs. nominal consumption/expenditure. The LCS framework uses the *nominal* consumption/ expenditure concept, reported in current national currency and valued at market prices. *Nominal* refers to the actual amount of money spent, or the value of consumption, measured in a given period without adjusting for inflation.

> ***Issue 5.*** *Should expenditures be recorded in nominal or real values?*
> ***Choice 5.*** *Expenditure amounts are recorded in nominal values.*

Within-year temporal inflation and spatial price differences. Temporal inflation and spatial price differences can affect data comparability. In countries experiencing high or hyperinflation within a year, adjusting for temporal price changes using consumer price indexes (CPIs) is recommended. CPI adjustment reflects the intertemporal price development from one period to another. In contrast, substantial price differences across geographic areas within and between countries describe the spatial or interarea difference of prices. To compare well-being within countries (e.g., across different regions, provinces, cities vs. rural areas), users will need to adjust nominal consumption expenditure – where relevant and available – with local purchasing power parities (PPPs); to compare across countries, they will need to use cross-national PPPs.

To support researchers in making appropriate intertemporal or interarea price adjustments, information on the date of interview or data collection and the region (where available) will be provided in the microdata. CPIs and PPPs will be provided in the accompanying documentation pages, which can be also linked directly to the microdata. Although relevant also for the analyses in this paper, no adjustments for spatial price differences have been carried out.

> ***Issue 6.*** *How should users adjust for price differences over time and space?*
> ***Choice 6.*** *The need to account for price differences depends on the type of analysis conducted. Intertemporal and interarea indices, adaptable to the consumption aggregate and its subcategories, are further explored to allow for adjustment to price changes over time and spatial price differences.*

II.2.c) Conceptual challenges

In this section, we delve into various conceptual difficulties encountered thus far in creating a fully comparable consumption concept that meets the three conditions outlined above. While our aim is to produce cross-national harmonised data files that reflect comparable consumption definitions, our ability to meet this goal has been challenged by the limited information provided in the survey data. We focus on seven major points: 1) the final use period, 2) the valuation of non-monetary consumption, 3) dwelling maintenance and repair, 4) the treatment of insurance, 5) health, 6) education, and 7) extraordinary expenses.

1) Final use period

One important general limitation of household consumption data is that it generally captures expenditures at the moment of purchase or acquition, but it does not necessarily reflect the actual period of consumption or use of the good or service. Within the reference period, households consume products like canned food from the inventory, while they may keep goods acquired during the reference period for consumption at a later period. When information on final use is not available, and household surveys rarely collect information on the intended final use or the actual consumption,

it is suggested to treat purchases as proxies for consumption in poverty and welfare analyses. For non-durable goods such as food and utilities, it is typically assumed that purchase and consumption roughly coincide over the survey period. While this approach results in inaccuracies for individual households, the impact at the aggregate level or when averaged over multiple years is generally considered minor relative to overall spending patterns, especially for non-durable items. The difference between period of purchase and period of use becomes more problematic in the case of durable goods. These will thus need to be treated differently (see section 2.a) (2) below).

2) Valuation of non-monetary consumption

In line with the System of National Accounts (SNA), non-monetary consumption should be valued at the market prices. This includes goods and services received in kind from employers, such as meals, housing, or transportation benefits, which are valued at their market equivalent to reflect their contribution to household consumption and economic well-being. Similarly, goods taken from own production – for instance, an unincorporated enterprise owner consuming products their business produces – are recorded at the prices they could have obtained if sold in the market. For home-grown food, valuation is likewise based on the purchasers' prices that would have been paid for the same quantity and quality of products if acquired from the market. In the same vein, the value of housing services from owner-occupied dwellings is estimated based on the market rent that would be paid for a similar dwelling, ensuring that the consumption aggregate reflects the economic benefit of living in one's own home.

The following section looks at selected specific challenges of valuing a) household services for own consumption, b) home-grown food, and c) subsidies and rations.

2.a) Production of household services for own consumption

Based on the OECD ICW framework, these services can be separated into three categories: (1) owner-occupied housing services; (2) services from household consumer durables; and (3) unpaid domestic services like cooking, housekeeping, shopping, minor repairs, and child and elder/disability care (Balestra and Oehler 2023). For all of these, people can produce these services for their households using required capital (e.g., a stove for cooking), intermediate goods (e.g., food purchased at a store), and their own labour inputs. A criterion for including labour inputs in the OECD ICW framework is that these services can be purchased on the market, and thus they have an economic value. This contrasts with non-market activities associated with leisure (e.g., enjoying the theatre) and personal care (e.g., eating, sleeping). which are not tradeable on the market but could have economic value to the individual. In some countries, a significant part of the population may be producing household goods and services for own consumption. The treatment of these components is similar to the production and valuation of *home-grown* food (e.g., on farms or in gardens), as identified by Mancini and Vecchi (2023) and included in the LCS framework under food. However, there is a difference: the value of *home-grown* food is the market price of the food, not the value of the labor input to produce the food. For example, the value of a *home-produced* meal would not be added to the LCS consumption measure. This means that we leave out only the value of unpaid domestic services, as the other intermediate inputs are already counted as consumption (groceries, gas, electricity, purchased kitchen equipment). The following paragraphs clarify the boundaries of the LCS framework further.

(1) The flow of services from shelter. The flow of services from shelter is an integral component in the generation of the LCS household consumption. For owned shelter and for rental units not valued at current market prices (including subsidized renters and households living rent-free), the

value of the flow of services is proxied as rental equivalence at current market prices. As noted earlier, the reported rents for other shelter units are good measures of the value of the flow of services. For owners, rental equivalence can be obtained by asking survey respondents what they think their homes would rent at current market prices, through modelling and imputation, or from tax authorities who have produced such a value for tax purposes. For owners, imputed market rents are based on shelter unit characteristics that are similar for both owners and households paying market rents. The same modelling approach can be used to impute market rents for those paying less than market rents to account for the consumption flow from the reduced rent, and the structure characteristics need to be similar for both sets of rental housing. For some countries, another source of market rents for subsidized or public housing is the government administrative agency that administers the subsidized rental program.

In order to increase comparability, it is recommended, as per the LCS feasibility study, to include the value of the flow of services from owned and subsidised or rent-free rental units in consumption. It is assumed that the consumption of other rental units is well proxied by current market prices. Due to data availability, rental equivalence or implicit market rents may need to be imputed. The feasibility study argues that even when the rental equivalence is self-assessed, the validity of the reports is dependent upon the availability of comparable rental markets within a country. Thus, it may be necessary to impute rental equivalence using modelling. However, even imputation modelling is limited by whether comparable rental markets exist for a country and within geographic areas (e.g., concentrations of owned housing in rural areas and rented housing in urban areas). In such cases, imputed rental equivalences based on hedonic regression models may not be valid. Self-assessments could be more valid in cases where survey respondents base their valuations on the user costs they need to cover (in addition to the opportunity costs of investing in owner-occupied housing), rather than reporting a rental equivalence to proxy the value of the associated service flows. [4] Even when rental markets exist, imputed rents may not adequately account for the fact that owned housing is typically of higher quality than rental housing. When this is the case, a premium adjustment could be added to the imputed rent.[5] Households living in rental housing for which they do not pay market rents could be asked what others pay for comparable housing at market rents. Household surveys rarely ask such a question.

The LCS framework will use the self-assessed reported rental equivalence or imputed rent – whichever is provided in the country's household survey data file – as the first choice. Further estimation methods will be explored in case these are not available. The estimation models will be evaluated and implemented as part of the harmonisation programs. While many imputation techniques are available, currently the hedonic regression model is recommended. In addition, the distributional impact of using different estimates of imputed rents will also be assessed. Even when the imputed rent levels are different, the distributional impacts could be the same.[6]

[4] For a comparison of results based on different methods see: Garner and Short (2009) and Garner and Verbrugge (2009a,b).
[5] Such an approach is followed to produce the flow of services from owner shelter in the U.S. for national accounts Personal Consumption Expenditures, see Rassier et al. (2021). Also see Aten and Heston (2020).
[6] See reports from the EU project Project no: 028412 AIM-AP Accurate Income Measurement for the Assessment of Public Policies. For example, for studies that include net implicit rental income for owner-occupants in an extended income measure, see Verbist and Lefebure (2007) for Belgium, Frick et al. (2007) for Germany, and Koutsampelas and Tsakloglou, P. (2010) for Greece. Using the Belgian dataset of the 2004 wave of the Survey on Income and Living Conditions in the EU (SILC), Verbist and Lefebure reported that using the self-assessed value of houses and an opportunity cost approach (imputed rents based on a regression model) and adding this to income yielded similar distributional consequences although the correlation

Issue 7. *Should the flow of shelter services be included in consumption?*
Choice 7. *The flow of shelter services is included; self-assessed rental equivalence or imputed rent is used as the first-choice method.*

(2) The consumption flow of durable goods. Goods are distinguished as non-durable, semi-durable, or durable. Non-durables are expected to be consumed within a relatively short period of time, for example, fresh fruits and vegetables purchased at a grocery store or farmers' market. Semi- durable and durable goods are assumed to be used continuously over a considerably longer period of time, for example, a winter coat as a semi-durable and a stove as a durable. Further, durable goods have two additional characteristics: first, they have relatively high purchase prices; and second, they have longer expected lifetimes of use. The LCS framework considers semi-durables the same as non-durables but follows the COICOP 2018 classification to distinguish "durable" goods. Durables include, but are not limited, to cars, trucks, furniture, appliances, musical instruments, and communication and information equipment.[7]

Just as for owned shelter, the consumption measure should include the flow of services from durable ownership rather than the acquisition price. Thus, we reject common national account practices, which strictly follow the *acquisition approach* for durables other than for owned shelter (Mancini & Vecchi 2022). Simply considering only acquisitions in the reference period, and assigning zero values to those who did not purchase durable goods during the reference period, would be a misleading practice for ranking individuals based on economic well-being. Instead, we recommend valuing the consumption durable goods using either the *rental equivalence approach* or the *user cost approach.*

The *rental equivalence approach* values durable consumption by using the cost of renting an equivalent good (e.g., the rental price of furniture or a motor vehicle). Nevertheless, many durable goods have limited rental markets, which yield to limited application of the method (Mancini & Vecchi 2022).

For this reason, the *user cost approach* is preferred to estimate the flow of services from durables. The value of the flow of services from a durable good can be calculated as the difference between the cost of purchasing the durable good at the start of the period and its resale value at the end of the period, after accounting for its use during the period. For most durables (excluding vehicles), user costs are estimated as two components: the *depreciation value* of the good over the period and the *opportunity cost* of capital. *Depreciation* simply describes the loss in value of an asset over time (due to both physical deterioration and the loss of market value), while the *opportunity cost* is based on the idea that the household sells the durable good at the beginning

of the two estimates was rather low. Frick et al. found a similar result using self-assessments and the regression-based opportunity costs approach applied to Germany, a country with less than 50% of households living in owner-occupied housing in 2007.

[7] It should be noted that if a durable is used in the production of a good or service consumed by the household, for example for the production of home-grown food, the value of the flow of services from this durable is already included in the current market value of the food; thus, a separate flow of services would not be needed for the durable. The same is true when major appliances are included in owned housing and thus their flow of services are implicitly included in reported rental equivalence. The assumption is that the owner would rent to themselves with the appliances included; however, if reported rental equivalence is based on local rental markets, and such units do not include these appliances, owner's reported rental equivalence would not either.

of the period and invests the revenue in the financial market. Opportunity costs are a function of the value of the durable and an interest rate or rates; these rates are not estimates but are based on external data. Mancini and Vecchi (2022) suggest a nominal interest rate to estimate opportunity costs, while Cho et al. (2024) used U.S. 10-year Treasury bond yields to estimate the opportunity cost of capital.

In contrast, depreciation rates are often estimated using the household survey data; recurring costs and expenditures are also available from the same household surveys. For durables like vehicles, recurring costs are added to the opportunity costs and depreciation to estimate user costs; for other durables (e.g., furniture versus a computer), there are no or limited recurring costs. Building on the work by Amendola and Vecchi (2022), Mancini and Vecchi (2022) describe three main methods for estimating the depreciation value for durable goods: the *geometric* model, *economic life* model, and *straight-line* model. [8] Further details on estimating the value of the flow of services from durables, including a comparison of geometric and economic life depreciation models, are provided by Mancini and Vecchi (2022). As noted by the authors, the geometric model assumes that the durable good lasts an infinite amount of time and tends to zero asymptotically. The idea behind the economic life model is close to the geometric model: a durable good depreciates over time at a constant rate but eventually reaches a finite service life, after which it may retain a scrap value (e.g., 5 % of its initial purchase price). Straight-line depreciation assumes a linear rate of depreciation over a fixed service life of the durable (e.g., for a personal computer with an assumed five-year depreciation period, the total depreciation value is divided into five equal parts to calculate annual depreciation).

In practical terms, this has the following implications for the construction of consumption flows from durables. To estimate depreciation from market prices, the analyst needs the current market value of comparable goods at different ages plus the price of a new item or the original purchase price. When surveys do not record exact ages or new-item prices, years of ownership can be used as an age proxy and the recorded purchase price can be substituted for the new-item price (under the assumption that used-item purchases are negligible). Depending on the availability of the elements mentioned above and the existence of pre-computed consumption flows, the LCS framework will adopt the most appropriate estimation methods, with the aim of ensuring that the resulting estimated flow of services is *operationally* comparable across countries' datasets. [9]

In the case of vehicles, user costs include not only depreciation and foregone interest but also additional costs associated with service use. Thus, it is necessary to account for these additional costs to fully represent the consumption value of vehicles. These include recurring operating costs associated with the use of the vehicle; for example, routine maintenance and repairs, insurance, registration and licensing to operate the vehicle, and, when incurred, property taxes. These

[8] See Diewert and Shimizu (2019) for additional ways to model depreciation rates that are suggested in the literature. Also see the Consumer Price Index Manual, Theory 2025 (ILO, Eurostat, IMF, OECD, UNECE and the World Bank (2025) for information on modeling depreciation and estimating the user costs of durables.

[9] Mancini and Vecchi (2022) present examples of estimating the value of the flow of services for non-vehicle durable goods and vehicles using data from the Maldives. See Cho et al (2024), Fisher and Johnson (2006), and Meyer and Sullivan (2012) for vehicle (cars and trucks only) examples based on U.S. data. Meyer and Sullivan (2012) estimated constant depreciation rates by comparing the prices of similar vehicles. In contrast, Fisher and Johnson (2006) estimated a constant depreciation rate for all automobiles. Cho et al. (2024) estimated depreciation rates using the Meyer and Sullivan (2012) method but allowed depreciation rates to vary by vehicle age.

additional costs are already captured in household expenditures and the LCS consumption measure. However, the opportunity costs and depreciation are not included.[10]

In the case of household major appliances, care must be taken to avoid double counting in the aggregate consumption measure when owners' rental equivalence is included and, in some cases, when tenants' rent is included. Double counting could arise if the shelter unit, whether owned or rented, includes these appliances either as part of the contract or by local custom in a given geographic area.[11] Two approaches can be used to avoid this double counting. One option is to adjust tenants' rents and owners' implicit rents by removing the value of service flows from major kitchen appliances or furniture included in the rent, and then adding a value for service flows based on the stock of such durables owned. The second option is to keep the tenants' rents and owners' implicit rents as they are, and to not include a flow of services from these durables separately. In the LCS data documentation, special attention is given to distinguish, whenever possible, between furnished and non-furnished shelter units and those with and without major appliances included.

In the case of reported owners' rental equivalence in particular, when the survey question is based on what an owner would rent the unit for, the reported rent may or may not include durables, regardless of local rental markets. This is the case of energy-producing durables, such as solar panels and geothermal units used to generate electricity. Rental units may not typically have these, but owned housing may. In such cases, owners' reported rental equivalence could implicitly include the flow of energy services from these. If the flow of owned housing services is instead based on imputations using tenants' rents, a premium would need to be added to the imputed rent for owned housing to account for this additional service flows. For durables like solar panels or geothermal systems, sources of data that could be used to value the flow of services – the value of energy produced from the durable – are energy meter readings, comparable market electricity prices, and administrative records, when available.

For a durable used for both personal and business purposes – for example, "tuk-tuks", which are typically used to transport persons and goods for business as well as for private use – an adjustment to the flow of services from such durables would need to be made to reflect private use. In these cases, we adhere to a guiding principle provided in the National Accounts definition of the household sector and non-profit institutions serving households (NPISH) (S14 & S15). If mixed use must be assumed in a country context and no clear distinction between own use and production is possible, the durable will still be included in the country-specific durable section; however, this needs to be explicitly reflected in the documentation as mixed use.

Although conceptually relevant for our current operationalisation of the LCS consumption measure, we *exclude* the flow of services from durables unless implicitly included in tenant rents and owners' rental equivalence or imputed rents. For our primary measure, we also do not include the acquisition value of such durables. Two extended measures are foreseen and will be made available only when information is either provided by data providers or can be reliably computed with the microdata at hand: 1) the LCS main consumption measure plus the

[10] For an example of the estimation of the consumption of motor vehicle (i.e., cars and trucks) services following the user cost approach, see Cho et al. (2024).

[11] Such is the situation in much of the U.S.; rental units are expected to include major appliances when rented. However, in other countries (e.g., France and Italy) this is not the case; renters are expected to bring their own appliances when they move in.

consumption service flow from owned vehicles, and 2) the LCS main consumption measure plus the consumption service flow of owned vehicles plus any other available consumption flow of durables.

As has been shown in Mancini and Vecchi (2023), only few countries allow for a systematic and comparable inclusion of consumption flows from durables. We do however include in the LCS data files additional non-consumption variables that reflect durable acquisition expenditures within the specified reference period of the survey. In this study, we create an additional *COICOP household consumption* measure that includes these purchases to examine the impact of durable purchases on the ranking of individuals and inequality measures.

Issue 8. *How should durable goods be treated in the consumption aggregate?*
Choice 8. *Consumption flows from durables, as well as the acquisition costs, are excluded from the main consumption aggregate. A second aggregate includes vehicle service flows, and a third includes other durable service flows, where available.*

Summing up points (1) and (2), the "flow of services from shelter" is included in the LCS framework and in our consumption measure, with data widely available for all but two countries in our study, Laos and the U.K. While the "consumption flow of durable goods" is within scope for the LCS, the values of these services are currently not included as separate components in our measure. The exception to the latter, at least for major kitchen appliances, is when the flow of services from these is implicitly included in tenants' rent and owners' rental equivalence (imputed rent and reported rental equivalence). This would be the case when it is customary or required by law that rental units include these appliances, and it may also apply to owner-occupied housing. Particular attention needs to be given to the service flows from durables that were purchased to produce household energy services, for example, those represented by solar or geothermal equipment. The consumption flow of durables will yield country-specific definitions driven by data availability. Possession flags are collected very differently across the countries; Appendix 1 clarifies the available detail in each of the country surveys.

(3) The consumption from unpaid domestic services. For the third category of services, referred to as unpaid domestic services in the ICW framework, little or no data are available from household consumption and expenditure surveys in emerging or more developed countries. However, the production of these services can be of tremendous importance to the economic well-being of households and their members and theoretically should be included in a consumption aggregate. As noted in the Stiglitz-Sen-Fitoussi report (2009), "Unpaid domestic work, such as shopping and the care of children and other household members, is important from the perspective of assessing both the total amount of household services produced and how family chores are distributed between men and women" (p.49). This report also includes results from the late 1990's to the mid 2000's based on time use survey data, showing that 15-16% of yearly hours are spent in the production of unpaid domestic services for France, Finland, Germany, Italy, the U.K., and the U.S., with the U.S. producing slightly less such services and engaging in more paid work hours. However, gathering such data and then valuing this time can be challenging, particularly with respect to a consumption measure of economic well-being. Yet work has been done to count and value these services. An example of recent work is that commissioned by the U.S. Bureau of Labor Statistics to add imputed values of home production

for own consumption to household records in the Consumer Expenditure Surveys (CE) (Zacharias et al. 2024a,b).[12] Time use data from the American Time Use Survey (ATUS) and auxiliary data were used for the imputations. The researchers for this study reported that adding this home production would increase consumption expenditures (with reported rental equivalence for owners replacing owner shelter expenditures) by 42% for households with no children and 99% for those with children. However, owing to data availability constraints, consumption from unpaid domestic services is not included in the LCS consumption measure.

Issue 9. *Should consumption from unpaid domestic services be estimated?*
Choice 9. *Consumption from unpaid domestic services is not estimated.*

2.b) Home-grown food

For emerging economies, and particularly lower income countries, the information on home-grown food quantities is collected in household surveys and the value is estimated by the statistical office/data collector and then added to the household data record. The value of this food is included in the LCS framework under food, rather than domestic services. As noted earlier, current market prices of this food include not only the value of time but also the value of other inputs such as the purchase of seeds, fertilizer, and the flow of services from framing equipment. Information on home-grown food is not as readily available in household survey data for higher income countries.

In estimating the value of home production for the consumption of home-grown food, care must be taken to avoid double counting by excluding intermediate inputs and including only the market price of the food in consumption. However, for domestic production – such the preparation of a meal at home – the costs of intermediate inputs, including purchased food, energy utilities, and the flow of services from major kitchen appliances, are already included in consumption. The value of the producer's time and expertise, however, is not currently captured, and the consumption value of the home-produced meal is therefore undervalued.

Issue 10. *Should home-grown food be included?*
Choice 10. *Home-grown food consumption is included in the consumption aggregate.*

2.c) Subsidies and rations

In a lot of societies, and according to the countries' institutional settings, some goods and services are provided at subsidised prices or are provided free to the household. It is recommended that these goods and services should be accounted for when producing internationally comparable consumption data, and that these be valued at market prices. In the LCS framework, subsidies like the food assistance benefits (SNAP[13]) in the U.S. are included within their corresponding consumption subcomponent, in this case as food (*hc1_1*). Including the value of these separately as in-kind food

[12] A National Accounts example of a satellite account for unpaid domestic services is provided by Bridgman et al. (2022) for the U.S.

[13] SNAP (Supplemental Nutrition Assistance Program) is the largest food assistance program in the U.S., providing monthly electronic benefits (via EBT cards) that low-income households can use to purchase food in approved grocery stores and supermarkets. Food purchases made with these are not separated in the CE data file from purchases made with other financial instruments like cash or credit.

benefits in the consumption aggregate would lead to double counting in the variable (*hcfoodis*). For other countries, the value of such benefits are typically not collected as part of food expenditures, but as separate and independent components of consumption. These should be added to food consumption. Likewise, other assistance benefits received through third-party humanitarian help should enter under the respective subcategory for the kind of assistance (e.g., clothing, transport), and additionally enter the category of goods and services received from private institutions.

> ***Issue 11.*** *Should subsidies and rations be included in consumption?*
> ***Choice 11.*** *Subsidies and rations are accounted for in the consumption aggregate as part of their relevant subcomponent, e.g., total food.*

3) Maintenance and repair of the dwelling

As noted in the documentation for COICOP 2018, for consumption the focus is on ordinary maintenance and repair of dwellings. These are distinguished by two main features: they must be carried out regularly to keep the dwelling in good working order, and they do not change the dwelling's performance, capacity, or expected service life. Maintenance and repair activities are categorized as either minor or major, but whether an activity is major or minor is not easily determined. COICOP group 4.3. identifies minor maintenance and repair expenditures as those associated with replacing wallpaper, repainting, and servicing fittings such as plumbing (e.g., replacement of a kitchen faucet). Depending on the rental contract, such work and associated expenditures may fall to the renter; however, the ultimate responsibility lies with the owner. Thus, even minor repairs may be the responsibility of the owner of the property (landlord or homeowner) depending on the rental contract Then even minor repairs would implicitly be included in the rent. Major maintenance and repairs, such as replastering walls or repairing roofs would be expected to be carried out only by owners. Based on our understanding of the UNSD (2023) framework, major repairs by owners are to be considered out of scope for final consumption expenditure, as they are seen as gross fixed capital formation.

However, particularly in the household survey data, there is usually no clear distinction between minor and major maintenance and repair activities. General guidance can be used but this requires information from countries' rental markets and contracts. From the ICW framework (2013), household consumption expenditure includes the costs incurred by tenants when these are their responsibility under the terms of the rental contract, and by owner-occupiers for materials and services related to minor maintenance and repairs only when the owned housing is located in a rental market in which tenants are expected to pay for these. When minor maintenance and repairs are not the responsibility of tenants and thus viewed as the responsibility of landlords, market rents and comparable owners' equivalent rent would already implicitly include these costs. Care must be taken to exclude expenditures for minor maintenance and repair expenditures in such cases to avoid double counting.

Major maintenance and repairs (e.g., repairing a roof or driveway) and expenditures for capital improvements (e.g., adding a room to a house or finishing a basement into a regular living space) fall outside the scope of COICOP, and the economic well-being concept of the LCS. Major repairs and improvements are reported as additional expenditure information in a separate section of the data file and not included in the consumption aggregate. However, it should be noted that when an owner or landlord has made major repairs and improvements to a property, the current rent would reflect that this property is of a different (assumed higher) quality than a similar property without such major repairs and improvements. Thus, the consumption value of these landlord-like major repairs and

improvements implicitly will be reflected in reported rental equivalence or imputed rents, and thus the flow of services from investments in such repairs is already included in consumption.

For simplicity, in our current consumption measure, we include what we identify as "inside the shelter structure" maintenance and repairs expenditures as consumption. In contrast, we identify "outside the shelter structure" work as major, for example, work on a sidewalk or roof, and exclude expenditures associated with these from the consumption measure. By doing this, we assume that all renters are responsible for paying for these "inside" repairs separately from their rent, and that owners' rental equivalence does not implicitly include these either; thus expenditures for these repairs represent additional consumption. By using an "inside" versus "outside" operational definition, we deviate from the COICOP/ICW distinction of minor and major repairs and allow, for example, that renters would be responsible for replastering walls. Whether this assumption is a valid one needs further study, but testing it depends on the availability of information in the survey data from the various countries.

Issue 12. *Should maintenance and repairs of dwellings be included in consumption?*
Choice 12. *Minor maintenance and repair of the dwelling are included in the consumption aggregate, while major maintenance and repairs are excluded.*

4) Valuing insurance

Based on COICOP 2018, the category "insurance and financial services" covers insurance and financial services which are provided by financial corporations. These may be paid for explicitly or implicitly. For example, implicit charges result from financial services associated with the provision of interest charges on loans and deposits, the acquisition and disposal of financial assets and liabilities in financial markets, and insurance and pension schemes. It is unlikely that the value of these services is collected in household surveys. For this study, the focus is on insurance that is purchased to protect households from financial loss and uncertainty related to their vehicles, shelter, dwelling contents, health care, accidents, and liability.

Life insurance products require special consideration. Such policies can be distinguished in those products that provide a payment at the maturity date of the policy and those ones that are term policies in case of death of the policy holder. The first type is considered in the same way as private pensions, as savings, and hence out of scope for consumption. In contrast, term policies are to be considered, for example, liability and accident insurance, and thus included in consumption (OECD, 2013). When the data is not separable in those two products, it is important to understand the national context to make a decision whether to consider them as consumption or not.

Operationally, there are two main approaches for assigning a value to insurance. The first is to use total premiums. The second is to use net premiums: premiums minus benefits paid. Net premiums reflect the cost to the company or government providing the insurance services.

If one uses net premiums to value insurance consumption, total consumption could be appropriately accounted for or it could be undervalued. Total consumption would be appropriately valued if the spending on benefits is already included in the spending for covered consumption categories like vehicle repairs along with net insurance premiums. On the other hand, total consumption would be undervalued if the insurance company reimburses the provider (e.g., vehicle repair shop) directly, but

benefits spending does not show up in the household's out-of-pocket expenditures for covered goods and services.

Along these same lines, using total premiums could result in total consumption being appropriately valued or over-valued. Total consumption would be appropriately valued if covered benefits are not included in out-of-pocket spending on covered goods and services. In contrast, it would be overvalued if the insurance company reimburses the beneficiary, and the out-of-pocket spending from insurance reimbursement is included in consumption. In this case, the inclusion of total premiums would result in double counting the consumption of covered goods and services.

A challenge for consumption measurement is that some types of insurance use both types of reimbursement. For example, vehicle insurance will often reimburse the beneficiary but will sometimes pay the repair shop directly. In this case, there will be some double counting in consumption if insurance is valued as total premiums; but it will be undervalued with net premiums. Thus, a benefit of using net premiums is the practical difficulty of removing insurance reimbursed benefit spending from the other categories of expenditure and consumption.

Specifically, regarding shelter-related insurance, premiums (net or total as noted above) for the coverage of the belongings or contents within one's housing and associated liability coverage are included in consumption. In contrast, insurance shelter coverage is implicitly included in reported rents and owners' rental equivalence; this type of insurance does not enter separately as a component of consumption**.** Country-specific information on housing insurance is desirable to be included in the LCS documentation. For example, in Europe, household content insurance is available to both tenants and homeowners and thus premiums for these represent consumption. In contrast, in the U.S. homeowners' insurance premiums coverage for both belongings (similar to tenants' insurance) and the structure; thus, to avoid double counting, a fraction of the total premiums for contents would need to be applied. In summary, in our current estimates, we are including premiums for contents/belongings and liability insurance as consumption.

Regarding health insurance, it is often financed by third parties (employers and government). In such cases, the value of health insurance will be missed by using household out of pocket premium spending. However, in the future, values for these could be imputed and added to the consumption measure. For an example of including the full value of health insurance, including those financed by third parties, see the work of Garner et al. (2023, 2024a) for the U.S.

Currently, the LCS measure includes total premiums paid out-of-pocket by households to represent insurance consumption. However, in future, we will consider how to better reflect service charges associated with insurance, for example, counting only a percentage of the premium based on information from country-specific insurance markets. The next section discusses how one could account for health when considered in-scope for consumption.

To conclude, for the LCS framework and this study, we do not attempt to value the component of insurance premiums that are associated with service charges; rather we include the premiums as reported by households. As mentioned in more detail above, this means that particular attention needs to be placed to exclude reimbursements from companies, as these could mirror double-counting in consumption.

The LCS measure also does not include the value the consumption of other financial services. Future work could include, when financial asset data are available in the household surveys, adopting a

method currently being used by the U.S. to impute financial services for the distribution of National Accounts consumption expenditures to households. This consumption is based on the value of household balances held at commercial banks and other depository institutions, as well as pension fund contributions (see Garner et al. 2024b, c).

Issue 13. *Should insurance premiums be included in consumption and if so, how?*
Choice 13. *Total insurance premiums as reported by households are included in the consumption aggregate; treatment of health insurance premiums requires further consideration.*

Issue 14. *Should consumption of financial services be estimated?*
Choice 14. *Consumption of financial services is not included in the consumption aggregate.*

5) Health

The treatment of health expenditures, including those for health insurance, within household consumption measures has long been debated, largely because health systems differ widely across countries in how care is financed and provided. In some countries, health services are provided to household members as a "right", while in others, such as the U.S., households must pay for them, entirely or partially, or meet certain eligibility criteria (e.g., low income to qualify for Medicaid). While most household surveys collect out-of-pocket spending on health goods and services, such expenditures do not necessarily represent discretionary choices that improve current well-being. In many contexts, especially where illness forces spending rather than reflecting voluntary consumption, these expenditures function more as necessary responses to adverse shocks than as indicators of welfare. Reflecting this, both the OECD ICW framework (2013) and the LCS feasibility study recommend excluding out-of-pocket health expenditures from consumption-based estimates of well-being.

This position also follows the earlier treatment proposed by Deaton and Zaidi (2002) who argue that such expenditures are typically unavoidable rather than welfare-enhancing. Second, any observed spending fails to account for the underlying decline in well-being caused by illness. Third, health spending varies little across income levels (low elasticity), so that inclusion or exclusion has minimal impact on welfare rankings. On the contrary, higher health spending may reflect deteriorating welfare rather than improvements and exclusion may rather provide a more stable comparison across countries.

Under the current LCS framework, out-of-pocket expenditures on health care goods and services are therefore excluded from the main *household consumption* aggregate but retained as supplementary information. A partial exception is made for health insurance. The inclusion of health insurance in consumption-based well-being measures is widely accepted but valuing it accurately remains a challenge. The 2025 SNA recommends that insurance services are valued as premiums earned plus investment income, minus claims. However, from a consumption perspective, the measure proposed here differs depending on who pays for the insurance and how it is provided:

a) Privately purchased insurance: Household consumption equals total premiums paid, as these reflect the full value of risk protection, coverage (ex ante or expected expenditures for health care goods and services), and administrative costs.

b) Employer-provided insurance: Consumption includes both the household's premium contributions and the imputed value of employer-paid premiums with the sum of these reflecting the full value of risk protection, coverage, and administrative costs.

c) Government-provided insurance: Consumption is valued using imputed estimates of the insurance benefit, often based on average per-person expenditures for covered goods and services provided.

This approach follows the one adopted by the U.S. Interagency Technical Working Group on Evaluating Alternative Measures of Poverty (2021) and is being followed by the BLS to produce a U.S. consumption-based well-being measure (Garner et al. 2023, 2024a). We emphasize that the valuation of in-kind health insurance is currently out of scope for this study and the LCS measure *household consumption*. In other words, we do not include consumption values for the employer share of health insurance or for health insurance provided by governments. In future versions of the LCS consumption measure, we proposed excluding all expenditures on health including health insurance due to comparability across countries.

Issue 15. *Should consumption of health goods and services be included in the consumption aggregate?*
Choice 15. *All consumption of health goods and services, whether out-of-pocket or in-kind, is excluded from the consumption aggregate. Health insurance premiums paid by households are included.*

6) Education

Education presents a conceptual challenge similar to health in the construction of cross-national consumption-based welfare measures, as household expenditure surveys routinely record out-of-pocket payments for schooling while the structure of educational provision varies considerably across countries. In some systems, education is delivered predominantly through public institutions as in-kind transfers, whereas in other systems, out-of-pocket expenses play a more direct role for households through tuition, fees, and ancillary charges. This diversity complicates any attempt to apply a uniform treatment to education expenditures across contexts.

The long-standing debate on the inclusion of education in the main *household consumption* aggregate is further complicated by divergent theoretical perspectives on whether education constitutes consumption or investment. Traditionally, education has been viewed as an investment in human capital (Becker 1964; Mincer 1974; and Schultz 1961), and thus the benefits accrue to the education recipient over a lifetime (Jorgenson and Fraumeni 1989). In contrast, in the System of SNA, expenditures for education (the full value, not just what is paid out-of-pocket by households) are included consumption expenditures but for a different reason. T**he** instruction conveyed by education services and produced by schools, colleges, universities are treated as being consumed by students in the process of their acquiring knowledge and skills (SNA 2025). In addition,, other researchers have suggested that education is a consumption commodity (good/service) from which satisfaction is derived by those obtaining the education, similar to the satisfaction derived from consuming a meal or shelter services (see Pseiridis et al. 2018, Alstadsaeter 2009, and Weisbrod 1962). At the same time, education also delivers immediate utility to households, whether through improved safety and supervision, stress reduction, or enhanced social engagement. From this standpoint, education functions not only as an asset-building activity but also as a source of current well-being (ITWG 2021).

Thus, while education spending is often treated as an indicator of welfare-enhancing consumption, this interpretation is highly context-dependent and risks obscuring material hardship if applied uncritically. In low-income settings, observed household education expenditures do not necessarily reflect preferences or willingness to consume; low or non-existent spending often denotes financial limitations rather than choice, reflecting the pressure of competing subsistence demands. Willingness-to-pay studies consistently show that education carries both investment and consumption value, generating future returns while also providing current utility, clearly interacting with overall consumption (Gertler and Glewwe 1990; Cheng 2021). For poorer households, higher education spending may in fact signal deprivation elsewhere, thus masking hardship rather than indicating higher well-being. This creates a fundamental dilemma for welfare measurement: excluding education risks ignoring a critical welfare-relevant expenditure, yet including it may misclassify constrained sacrifice as consumption. In future versions of the LCS consumption measure, we proposed excluding all expenditures on education due to comparability across countries.

Issue 16. *Should consumption of education goods and services be included in the consumption aggregate?*
Choice 16. *Consumption of education goods and services, defined as household out-of-pocket expenditures, is included.*

7) Extraordinary expenses

In the current formulation of the LCS consumption aggregate, we also exclude extraordinary ('lumpy') expenses based on the recommendation of Mancini and Vecchi (2023), but we have created a separate category to identify these for users who wish to include them in another measure of consumption. Such expenditures can include those for weddings, funerals, and dowries. Whether to include or exclude extraordinary expenditures, including those that are 'non-typical' expenditures, is still up for debate. We aim to not follow a distinction in frequency of the consumption item, as various items might be very infrequent, such as annual insurance premiums or expenditures for an exceptional 'once-in-a-lifetime' vacation trip. It will not be possible to separate such expenses out from the microdata.

The decision to include extraordinary expenditures in consumption could be based on whether these are for the consumption of household members or people living outside the household. If the "consumers" of the special occasion expenditure live outside the household, then such expenditure would be identified as inter-household transfers, not consumption by the spending household. Another criterion that could be used is whether the expenditure represents an asset transfer as in the case of a dowry, for example, or if the expenditure is for the purchase of a durable or capital good to serve as a dowry.

Issue 17. *Should extraordinary ("lumpy") expenses be included?*
Choice 17. *Extraordinary expenses are excluded from the consumption aggregate, with country-specific guidance required to define such expenses.*

II.3) Proposed LCS variable structure

The LCS structure includes the following three major divisions: 1) *non-durable consumption*, 2) *housing consumption*, and 3) *consumption flows from durables*. Any variable entering these building blocks for the consumption will need to be annualised in order to allow aggregating them to the consumption aggregate *household consumption*. The section 4) *expenditures excluded from the consumption aggregate* lists the variables that are provided besides the consumption aggregate.

1) Non-durable consumption (section C_ND). The consumption divisions closely follow the latest document available for the revised COICOP 2018 classification (UNSD 2023). All durables, which are identified by the label '(D)', are excluded from the major categories (e.g., the purchase of a vehicle, or purchase of a TV). The non-durables major categories include the following:

hc1	*food and non-alcoholic beverages*
hc2	*alcoholic beverages, tobacco and narcotics*
hc3	*clothing and footwear*
hc5	*furnishings equipment and routine household maintenance (excl. major durables)*
hc7	*transport (excl. major durables)*
hc8	*information and communication (excl. major durables)*
hc9	*recreation, sport and culture (excl. major durables)*
hc10	*education services*
hc11	*restaurants and accommodation services*
hc12	*insurance and financial services*
hc13	*personal care, social protection and misc. goods and services (excl. major durables)*

2-digit COICOPs. Each of these major categories is further disaggregated at the second level of the COICOP grouping. For example, in the case of education, this leads to five additional variables:

hc10	*Education services*
hc10_1	*Early childhood and primary education*
hc10_2	*Secondary education*
hc10_3	*Post-secondary non-tertiary education*
hc10_4	*Tertiary education*
hc10_5	*Education not defined by level*

Food and non-alcoholic beverages. Special attention is given to the *food and non-alcoholic beverages* division to differentiate between purchased, own-produced, and in-kind/gifts consumption given the importance of non-purchased food in low- and middle-income countries.

hc1	*food and non-alcoholic beverages*
hc1_1	*food*
hc1_1p	*food (purchased)*
hc1_1o	*food (own produced)*
hc1_1i	*food (in-kind/gifts)*
hc1_2	*non-alcoholic beverages*
hc1_2p	*non-alcoholic beverages (purchased)*
hc1_2o	*non-alcoholic beverages (own produced)*
hc1_2i	*non-alcoholic beverages (in-kind/gifts)*

hc1_3	*services for processing primary goods for food and non-alcoholic beverages*

2) Housing consumption (section C_H). This section captures all consumption expenses related to housing. As we closely follow the COICOP classification, in practice this relates closely to COICOP division 4. Since variables on utilities may allow for a more detailed, microdata-driven classification – for example, separating renewable energy sources – the final LCS variable list might foresee a more detailed classification for housing consumption. For now, we only present the major groups in line with the COICOP framework. As noted above, only minor maintenance and repair expenditures are included in consumption; major maintenance and repairs are classified as home improvements carried out by owner-occupiers.

hchous	*housing consumption*
hrenta	*actual rentals for housing, household*
hrenti	*imputed rentals for housing, household*
hmaint	*maintenance, repair and security of the dwelling, household*
hwater	*water supply and miscellaneous services relating to the dwelling, household*
helectr	*electricity, gas and other fuels, household*

3) Consumption flows from durables (section C_D). As described in Section II.2.c), the estimation of the consumption flows could be done using various techniques. However, particularly in expenditure surveys they are frequently not provided. At this stage, researchers who wish to incorporate durables into their consumption measure will need to rely on available information, such as possession flags, year of purchase, and initial purchase price, to construct reasonable annualized consumption flows consistent with their analytical framework. Thus, the LCS database will provide these variables at the highest level of detail available from the source data in order to support the construction of consumption flows from durables. When consumption flows from durables are available in the data and estimated by the data provider, the LCS framework adopts the approach of using these estimated flows.

4) Expenditures excluded from the consumption aggregate. This block consists of three main blocks: the purchase values of durable goods, health, and other expenses outside of the classification boundary of COICOP and the LCS. These include extraordinary expenditures (e.g., for weddings, dowries, funeral, birth), major household repairs, and the purchase of houses and investment assets. We do not list here other non-consumption expenditure such as income taxes, other direct taxes, voluntary pension contributions, intrahousehold transfers, and loan payments. These are pre-existing categories in the LIS/LWS databases.

Purchase of durables. The section purchase of durables shows a very country-specific element to the LCS. When available, this information is retained at the national-level detail and provided in the *non-core* files. The only grouping applied is the renaming of national variables into a series of variables (1 to *n)* within the corresponding COICOP category; for example, the nationally defined durables 'chairs' and 'cupboards', both part of COICOP 5.1.1, are made available as x0511_1 and x0511_2. The reference period will be documented as well, but unlike in the building blocks of total consumption, no annualization will be carried out.

In the core files, the various items are aggregated to the respective COICOP grouping. It should be noted that when researchers aim to integrate those back to the annualized concept, they need to carefully consider annualization of these amounts.

- *furniture, furnishings, household appliances and equipment (COICOP 5.1.1, 5.3.1,5.5.1)*
- *health assistive products (COICOP 6.1.3)*
- *purchase of vehicles (COICOP 7.1)*
- *information and communication equipment (COICOP 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.9)*
- *recreation durables, musical instruments, pets and pet products (COICOP 9.1, 9.3.2.1, 9.5.1)*
- *jewellery and watches (COICOP 13.2.1.1)*

MAJOR CONSUMPTION AGGREGATES. This section encompasses a series of consumption aggregates corresponding to various components of consumption expenditure. Two distinct definitions of total household consumption aggregates have been developed. The first definition, referred to as *household consumption* (*hc*), includes the three main building blocks: (1) *food* consumption (*hc1*); (2) *non-food and non-durable* consumption (*hc2*, *hc3*, *hc5*, *hc7*, *hc8*, *hc9*, *hc10*, *hc11*, *hc12*, and *hc13*); and (3) *housing* consumption (*hchous*). This measure is expected to be widely available across datasets, given the wide availability of its primary components. Two extended measures are foreseen: 1) the LCS main consumption measure plus the consumption flow of vehicles, and 2) the LCS main consumption measure plus the consumption flow of vehicles plus any other available consumption flow of durables. As discussed above, these measures are anticipated to be less comprehensively available due to the limited availability of consumption flows from durables.

Subdimensions. It is important to provide sufficient detail so that microdata users can separately analyze own-produced services and received in-kind services, especially subsidies provided by the government, in-kind payments from the employer, or in-kind transfers from private institutions or other households. Therefore, the variable list foresees the following sub-classification, e.g., for housing:

hchous	*housing consumption*
hchousp	*purchased housing consumption*
hchouso	*own produced housing consumption*
hchousi	*gifts, benefits, donations, and in-kind payments in housing*
hchousie	*in-kind payments from employer in housing*
hchousis	*in-kind benefits from state*
hchousip	*gifts and in-kind donations from private institutions*
hchousih	*gifts and in-kind transfers from other households*

Likewise, the other two building blocks, *food* and *non-food non-durable consumption*, are split into *purchased*, *own produced*, and *gifts, benefits, and in-kind payments*.

Figure 1 gives a complete overview on the sections, naming convention and aggregation plan.

<Insert Figure 1 here>

III. First results and comparability tables

Following the methodological considerations in section II), the LIS team harmonized eight datasets:[14] France (fr10), Georgia (ge21), Italy (it16), Laos (la12), Mali (ml20), Palestine (ps17), Peru (pe19), and the U.K. (uk21). In addition, the BLS team, co-authors of this paper, harmonized the Consumer Expenditure Survey (CE) from the U.S. (us22). This section provides a first set of descriptive findings and methodology tables on those nine country studies, with a focus on highlighting cross-country differences with respect to level of economic development. According to the World Bank Country and Lending Groups, the following classification applies:

- Low Income: **Mali** (ml20),
- Lower Middle Income: **Laos** (la12) & **Palestine** (ps17),
- Upper Middle Income: **Peru** (pe19), **Georgia** (ge21),
- High Income: **Italy** (it16), **France** (fr10), **the U.K.** (uk21), **the U.S.** (us22).

We explicitly selected surveys from different regions and with different survey focus and design to explore the cross-national differences with respect to availability of detail, and differences in consumption patterns across the distributions. It should be noted that the lower middle-income group is composed of two countries which are just at the classification boundary; Laos moved from low income just the year before the survey was carried out, and Palestine has been very close to the category of upper middle income. Thus, we expect the consumption patterns to diverge within this country category, with Laos rather resembling low-income patterns, and Palestine upper-middle-income patterns. The main characteristics of the surveys for the nine countries above are described with some detail in the Appendix. For all of these countries, the data that we use are collected and made available by the national statistical offices that are responsible for collecting and processing the data, with exception of the U.S. data, where the analyses were carried out by the BLS researchers following the guidance by the LIS researchers and analytical results forwarded with the permission of BLS management.

Unlike the feasibility study by Mancini and Vecchi (2023), which focused on poverty profiles, this study explores the whole distribution. In contrast, we focus on inequality analyses, applying a Lerman-Yitzhaki Gini decomposition to identify which areas of consumption are driving inequality and show the concentration of consumption patterns across the distribution. Our approach is to first construct two measures of household consumption. The main measure, referred to here as *LCS household consumption,* aims to capture a consumption-based welfare aggregate. The second measure is accounting-based and corresponds to *COICOP household consumption*, including the purchase of durable goods within the reference period. Tables 4 and 5 will specifically contrast the two measures, whereas all other tables and figures refer only to the newly proposed LCS measure.

We initiate our empirical analyses with a discussion on equivalence scales, where we illustrate how this key choice affects the ranking of individuals (Section III.1). The following sections then analyze the consumption mix (Section III.2), the inequality metrices and the relation between income and consumption (Section III.3), and conclude with the decomposition analysis (Section III.4).

[14] Dataset naming convention follows the notion *ccyy* composed of *cc* for *iso2*-code plus *yy* for the two last digits of the reference year.

III. 1) Equivalence scale adjustment – different contexts, different approaches

For inequality analysis, it is necessary to equivalize consumption to account for differences in households with regard to composition. This process is referred to as equivalizing the data. In much of the lower income country literature, consumption per person (per capita) is used; however, in higher income countries, different equivalence scale adjustments are preferred to account for *economies of scale* within households. *Economies of scale* refer to larger households being more efficient in the use of resources and thus having lower per capita expenditures than smaller households using the same level of resources. Such efficiencies result from multiple household members sharing household public goods and services like shelter. The greater the sharing, the greater the *economies of scale* and the lower per capita expenditure needed for consumption. In contrast, for more private goods like food, there is little sharing resulting in few *economies of scale*, and higher per capita expenditure. In the next section, we summarize key arguments from the existing literature and discuss the extent to which *economies of scale* are a necessary and applicable concept for interhousehold comparisons of consumption.

Earlier research shows that the question of equivalence scale adjustment is a critical issue in the context of poverty measurement and comparative welfare analysis. Failure to adjust for *economies of scale* or differing needs can significantly affect the identification of specific population groups as poor or non-poor (Lanjouw and Ravallion 1995). Demographic factors, such as the age composition of a household, can make poverty measures highly sensitive to these adjustments. The early papers applying *economies of scale* by Cutler and Katz (1992) and Phipps and Burton (1995) demonstrate this well for the cases of the U.S. and Canada.

In developing countries, the per-capita consumption measure is widely used for its simplicity and alignment with macroeconomic indicators such as GDP per capita. However, this method implicitly assumes no *economies of scale* and uniform needs across household members, an assumption that is highly controversial. High-income countries, in contrast, often employ the square root of household size to adjust household consumption, which accounts for *economies of scale* (see Buhmann et al. 1988 for a discussion of equivalence scales applied to income). Alternative measures of unified *economies of scale* are for example promoted by the OECD (Atkinson et al. 1995; OECD 2013; OECD 2024).

Determining the "right" equivalence scale adjustment method is challenging. Per-capita consumption measures fail to consider household *economies of scale* in consumption and different needs of adults and children within the household (Lanjouw et al. 2004). Therefore, more sophisticated approaches should be considered, such as demand system methods, which incorporate household characteristics and consumption bundles, as well as theoretical assumptions underlying equivalence scales (Banks et al. 1994; Browning et al. 2013). Goedemé et al. (2019) underscore the critical role of country-specific equivalence scales in cross-country comparisons, as *economies of scale* in consumption of goods and services vary within and across countries. Daley et al. (2020) therefore ask whether it is still appropriate to use the same equivalence scale if consumption expenditure patterns differ across countries and over time. They find considerable cross-country variation in *economies of scale*, as well as increases over time, and show that *economies of scale* are generally larger than those implied by the 'square root of household size' equivalence scale. Daley et al. (2020) further raise the question of whether different equivalence scales should be applied to expenditure components within households, allowing for greater *economies of scale* for shelter than for food. This issue is addressed

by Renwick and Garner (2020), who apply component-specific equivalence scales in the production of alternative poverty thresholds and demonstrate their impact on poverty rates.

For our distribution analysis, we divide household consumption by an equivalence scale to estimate adult equivalized consumption. We produce and compare results based on two equivalence scale adjustments: *per capita* and division by the *square root of household size* (Tables 2.a) and 2.b) in this section). In the following Sections III.2-4, we focus on presenting only *square root of household size* adjusted results. We show analyses for the full distribution of consumption decomposed by categories of consumption (e.g., food, shelter) as noted earlier and look at consumption profiles in conjunction with income. For both types of analysis, we rank households by their adult equivalized consumption from lowest to highest consumption. Since our focus is on the distribution of consumption across individuals, we use person weights (e.g., household weight times number of household members) to estimate the quintiles. For example, we are interested in what percentage of total adult equivalized consumption is accounted for individuals in the lowest quintile of the population distribution. We also examine the composition of the quintiles; for example, what percentage of individuals living in owned shelter are in the first versus fifth quintiles.

Population mix by household and individual characteristics along the distribution

Tables 2.a) and 2.b) showcase the sensitivity of consumption measurement to different adjustment methods. Each cell shows the representation of selected population sub-groups in the bottom (column Q1) and top quintiles (column Q5). Table 2.a) applies a per-capita adjustment (total consumption divided by household size) to convert household level amounts to adult equivalized individual amounts, whereas Table 2.b) applies the square-root scale (total consumption divided by the square root of household size). Therefore, the latter assumes higher *economies of scale* for small households and gradually decreasing *economies of scale* by size of the household. In contrast, the per-capita transformation does not apply any *economies of scale*.

<Insert Table 2. a) and 2. b) here>

Adjustment by per capita (Table 2.a)) has a strong effect in ranking persons living in large households toward the bottom of the distribution, relative to the full distribution of all persons. For all countries, average household size is always higher for quintile 1 versus quintile 5. This is most strongly visible in Mali, where the average household size is close to 12 persons in the bottom quintile and only 4.3 in the top quintile. This discrepancy is clearly visible in all study countries; in Georgia, Italy, France, and the U.S. the average household size in quintile 5 drops even far below two persons. This contrasts with average household size in the square root scenario for which the range of household size from lowest to highest quintile is more compressed shown in Table 2b). Using the square root of household size, quintile 1 shows a larger average household size than quintile 5 in Mali, Laos, Palestine, Italy and the U.S., while averages are similar in Georgia and France. However, in Peru and the U.K., average household size in quintile 1 is smaller than in quintile 5.

The percentage distributions of households and individuals by selected household characteristics are also shown in Table 2.a) and 2.b). Results by household type categories differ between per-capita and the square-root adjustments. When per-capita adjustment is applied to consumption, selected subgroups of one-person households are more likely to be in the upper end of the consumption distribution. For both groups of one-person households – working age and non-working-age – more than 50% of individuals are frequently found in the highest quintile (results not shown for all such households). For example, among one-person households with a working-age reference person,

Palestine shows the largest share in quintile 5 (76%), whereas such households are scarcely observed in the bottom quintile (1%), if at all. In Mali and Georgia, working-age one-person households are not observed in the bottom quintile. Similarly, couples composed of two working-age individuals are rarely found in the bottom quintile; an exception is Peru, where 10% of such couples fall into the bottom quintile.

The square-root-scale adjustment shows a much more nuanced picture. Consistently, couples in working-age households are more likely to be in the top quintile across countries (ranging from 23% in Peru to 37% in Mali), but a non-negligible share is also found in the bottom quintile (ranging from 4% in Mali to 25% in Peru). Although rarely observed in lower- and middle-income countries, our results for working-age one-person and couple households suggest that such households in Mali, Laos and Palestine are likely among the higher-consumption units relative to households with other compositions, based on comparisons between quintiles 1 and 5 within household type. In particular, we find that households with children aged less than 18 and extended families/households are more frequently located in the bottom quintile and less frequently in the top quintile under the per-capita scenario. Findings for the elderly (65+) households are quite diverse. In Peru, persons living in such households exhibit rather low consumption patterns, with roughly every second person in the lowest consumption quintile, while in Palestine the reverse is observed. In Palestine, such persons frequently show the highest consumption profiles among elderly couples, with 37% in the highest quintile.

Overall, the square-root adjustment leads to a more balanced representation of individuals in subgroups across the quintiles. It is worth noting that persons living in larger households/families with only one or two dependent children in the advanced countries of our sample are disproportionately found in the bottom quintile when per capita adjustment is used (23% for Italy to 30% for the U.S.). For all countries except Mali, under the per capita adjustment, a higher percentage of persons living in couples with more than two dependent children are in quintile 1 than in quintile 5. By contrast, for all countries, when the square root of household size is used, persons living in such households are more represented in quintile 1 than quintile 5. These results suggest that further sensitivity tests may be warranted to assess whether the square-root scale – which does not account for different consumption patterns between young children, teenagers, and adults – is appropriate to compare well-being across household types.

The distinction in the distribution of households by urban versus rural areas shows rather strong differences between the countries rather independent of the equivalization. Strongest differences between urban and rural areas are to be found in Mali and Laos, where almost half of the urban population are found in the top quintile.

Non-homeowners in lower income countries are more frequently found in the top quintile (with the exception of Palestine), which supports earlier findings. This pattern is likely related to differences in housing markets in different countries. For example, is the rental market composed of newer, more expensive housing relative to the owned housing stock? Country-specific housing market information is needed for us to better understand these results. In higher income countries, homeowners without mortgage payments are moving notably up in the distribution when per-capita adjustment is applied, whereas the pattern is more balanced when the square-root scale is applied.

The individual-level patterns are likewise more balanced when moving from per capita to the square-root scale. This is in particular the case among younger children. Across all countries, children are more represented in the bottom quintile, but their presence is more pronounced in the higher income

countries. This is particularly true in the per-capita scenario (34% for Italy up to 53% for the U.S.) but remains visible in the square-root adjustment as well. However, the presence of children in the bottom quintile is only marginally less in the lower income countries (21% for Mali to 25% for Peru) than in the higher ones (24% for France and the UK to 29% for the U.S.).

Education levels yield rather expected results across the countries. Particularly strong differences are observed in the less developed/lower-income countries for individuals with medium to higher levels of education; such individuals are more likely to be in the top quintile, and their households are more likely to have higher levels of equivalized consumption. In high-income countries, it is also unlikely that a person with medium or high education is among the those with the lowest consumption. The U.S. is the leading case in the advanced countries in this regard, but the differences in the percentage distributions for individuals with higher education between quintiles 1 and 5 are much smaller under per-capita adjustment (5 percentage points versus 16 percentage points).

III.2) Consumption mix by major categories along the distribution

This section turns to the composition and distribution of household consumption, examining how different definitions of consumption affect the observed consumption mix. It presents the first distributional analysis using two consumption aggregates: the LCS consumption aggregate and the extended consumption aggregate more closely aligned with the COICOP classification. First, Table 3 describes the consumption mix following the core household economic well-being concept of the LCS: total consumption expenditure excluding the purchase and consumption of major durables and health expenditures. Results are presented using the square root of household size as the equivalence scale[15] and person weighting. For example, for Mali in 2020, 69% of the population's consumption was for food. Table 4 then presents percentage shares across categories and countries when expenditures on durables and health goods and services are added to consumption.

<Insert Table 3 here>

Table 3 contains three columns: the overall average percentage of each category relative to total country consumption, and separate columns showing the consumption shares for individuals in the bottom and top quintiles. Most notable is the gradual decrease in importance of food consumption from low- to high-income countries. The proportion of food and non-alcoholic beverages ranges from almost 70% in Mali to approximately 12% in the U.S., with the U.K. at 18%. At the same time, the U.S. shows 8% for restaurants and accommodation, while the U.K. records the highest value at 10%. Thus, to comparatively analyze total food consumption across countries, both food at home and away need to be considered together. Attention also needs to be given to the share of total food that is home-produced versus purchased or received from outside the household. Although not shown here, the share of food that is home-produced is 25.5% in Mali and 52.1% in Laos.

Making definitive statements about the proportion of total consumption devoted to food at home, food away from home, and alcoholic and non-alcoholic beverages is difficult due to cross-country differences in how the data are provided. These differences may result from the way the data are collected or the way the data are categorized by the country to create the data files that we use. For example, the variable for consumption in restaurants and the like may not separately identify alcoholic beverages, as is the case in Mali and in the U.S. starting with 2023). Also, a minor share of food expenditures may be reported as part of 'package holidays', which are included in the category

[15] Results using per capita adjustment have been also created and show very similar breakdowns.

recreation, sports and culture. It is also not clear whether 'take-away food' allows for a clear separation between food and alcoholic beverages.

Despite country-specific classification and/or collection issues, for all countries home-consumed food and non-alcoholic beverages constitute a significantly higher proportion in the first quintile than in the highest quintile. Differences are very distinct in Laos and Peru, and generally less pronounced in the high-income countries. The same pattern can be confirmed for alcoholic beverages, tobacco and narcotics, with the exception of Mali, the U.K., and the U.S. For these countries, the percentage shares are marginally higher among the bottom quintile. Consumption on restaurants and accommodation is negligible in the bottom quintile for the low and middle-income countries. Even the share among the highest consumption quintile is below 1%, with the exception of Laos where it reaches a level of nearly 5% of total consumption expenditure. In contrast, in the higher income countries, this category of consumption accounts for between 7.5% (France) and 14.6% (U.K.) of total consumption among the highest consumption quintile.

The second most important component across all countries is housing. It should be noted that in the Laotian data and the U.K. data, imputed rent is not yet available. This bias is non-negligible in this comparison and needs to be addressed in the final release of the LCS database. The availability of imputed rent is a necessary condition to calculate a comparable concept of total consumption. The calculation of non-durable, non-housing consumption is a very restricted concept for cross-country comparisons, given that the majority of datasets have full information on housing consumption expenditure. Therefore, we do not further evaluate housing in those two countries. In most countries, housing consumption expenditure share is much higher in the bottom quintile, with the exceptions being Peru and the U.S. For Peru, the top quintile share is almost twice that of the bottom quintile. For the U.S., the top quintile share is only marginally higher than that of the bottom quintile, but housing consumption shares for both quintiles exceed 40%, suggesting that housing is by far the main consumption component across the entire U.S. distribution. Other countries in which housing consumption shares exceed food consumption shares in the bottom quintile include Georgia (46.5%), Italy (46.7%), and France (33.1%).

For all countries but Mali and the U.K., transport is the next highest consumption item, with a higher share in the top quintile than the bottom quintile. The next highest shares for the U.K. are for recreation, sports, and culture (11.1%), while clothing and footwear are highest for Mali (6.4%). Information and communication account for a relatively high share in Georgia (7.8%) and the U.K. (6.5%), with the lowest quintile accounting for a higher share of total consumption than the top quintile. The share of consumption is particularly high in the categories 'recreation, sports and culture' and 'transport'. The category 'information and communication' in particular mirrors differences in the level of development. In emerging countries (Mali, Laos, Palestine, and Peru) consumption of these goods and services is considerably higher in the highest consumption quintile compared to the country average. However, the opposite is true in the higher-income countries; the bottom quintile in these countries exhibits higher shares for 'information and communication' compared to the country average.

As noted earlier, consumption of education services is limited to the out-of-pocket spending in the LCS framework thus far. However, if these instead represent investments in one's development and skills, they should be entirely excluded from our measure. They are nevertheless included at this stage to examine the importance of such expenditures across countries and across the distributions. While

education expenses represent a relatively small share of total consumption, they account for a larger share in the top quintile than in the bottom quintile. Among all the countries in our study, Peru has the highest share for education expenditure (5.0%), and the highest corresponding share in the top quintile (7.3%). The next highest shares are for Palestine, Georgia, and the U.S. Further discussion is warranted regarding whether to include or exclude education services as part of consumption.

In addition to the distributional results based on the LCS consumption aggregate reported in Table 3, Table 4 presents percentage shares across categories and countries when expenditures on durables and health goods and services are added to consumption. The first column, labeled "variable", lists the LCS variable names, with "hc" for consumption as in Table 3, "hx" for durable purchases, and "hhealth" for health expenditures. As in Table 3, individual-level results are obtained by dividing household expenditures by the square root of household size (using the per capita equivalence scale yields similar results, as shown in the Appendix) and by applying person weights.

Table 4 highlights the importance of separating major durables in a consumption-based measure of economic well-being across countries. It shows the percentage composition of consumption after including durable purchases in the reference period and health expenditures (Column A). For example, in Mali, food and non-alcoholic beverages account for 65.7% of this new total compared to 69.3% of total consumption reported in Table 3; this is a drop in the share by 3.6 percentage points, or 5% (Column (B)). This drop represents a shift in the relevance of categories in the consumption mix between the LCS concept and the extended concept (which also includes the purchase of durables and health consumption). Thus, for all consumption categories that do not contain durables or health expenditures, the percentage share of these categories in the consumption mix goes down at the same rate (Column (B)).

For the remaining consumption categories, including durables and health expenditures may increase or lower their overall share in total consumption, depending on the importance of these added expenses in the overall consumption mix. For example, inclusion of 'purchase of vehicles' would on average increase consumption category 'transport' by 113% ((23.49-11.01)/11.01=1.13) in Laos, and by about 69% and 66% in the U.S. and the U.K., respectively. On average across the nine countries, 'purchase of vehicles' would increase transport consumption by 49%, while the inclusion of durables in the 'furnishings' would raise the consumption share by 45%. The situation of 'information and communication' category is more nuanced – inclusion of durables and health expenditures would increase its share in the consumption mix in all countries but Georgia, by 15% on average.

By contrast, the share of consumption for 'recreation, sports and culture' would decrease in all countries but Mali and the U.S., bringing the average effect to -5%. Average share of consumption expenditure devoted to 'jewelry and watches' also drops by 7% relative to its share in the LCS consumption concept, reflecting the low relative importance of these added durable expenses in the overall consumption mix. At the same time, extending the consumption measure in categories with low overall shares can result in large percentage increases, as is the case for 'recreation, sport and culture' for Mali (28%) and 'information and communications' for Laos (44%) and Palestine (53%). More generally, it needs to be concluded that durables are collected quite differently across countries, leading to substantial cross-country differences. Exclusion of durables from a consumption-based economic well-being measure seems to be imperative for improving cross-national comparability of results.

<Insert Table 4 here>

III.3) Inequality analysis using income and consumption measures

In this section, we first present Gini coefficients of inequality for three different measures of well-being: household consumption excluding durables and health expenditures (the LCS measure), extended household consumption including the purchase value of durables and health expenditures (referred to as the COICOP measure), and disposable household income. Disposable household income is defined as the sum of monetary and in-kind income from labor, income from capital, pensions, other social security transfers, and in-kind social assistance transfers, as well as monetary and in-kind private transfers. The reason for comparing consumption to income is to illustrate how inequality differs across alternative measures of economic well-being. We make no attempt to create a consistently defined income measure; thus, it is possible that components of consumption are not funded by disposable income. Such components excluded from income include net implicit rental income from owner-occupied housing. By contrast, other non-monetary components, such as the net implicit value of home production for own consumption (e.g. home-grown food) and in-kind transfers (public and private), are included in the income definition.

Second, we look into the joint analysis of two out of the three measures of well-being: the LCS measure of household consumption and disposable household income.

Overall Inequality

Table 5 presents Gini coefficients for the three measures of well-being across different countries based on the square-root scale.[16] In addition, country rankings from most unequal (1) to most equal (7 or 9, depending on the number of countries compared) are presented. Concerning the country inequality rankings, the lower-middle-income country Laos stands out as the most unequal country irrespective of the well-being measure used. Gini coefficients for Laos range from 0.378 using the concept of household consumption to 0.453 using the COICOP measure of household consumption. Among other consistently high-inequality countries are Peru and Palestine, with rankings ranging from 1 to 3 and from 2 to 4, respectively, depending on the measure used. The U.S. rankings change from being the third least equal country using the disposable income measure to being fifth using the LCS concept of household consumption. Compared with the U.S., Gini coefficients for household consumption are smaller in France, Italy, Georgia, and the U.K. Finally, among countries ranking as the most equal in at least one of the well-being measures used, France and Georgia stand out. Both exhibit the lowest or second-lowest Gini coefficients of consumption inequality, alongside relatively higher Gini coefficients for disposable income inequality, particularly in the case of Georgia.

When comparing Gini coefficients of different well-being measures, we observe that the coefficients for consumption (both excluding and including durables) are consistently smaller than those for disposable income. Reasons for the differences could be based on the fact that consumption and income are not consistently defined, but they may also be related to access to credit and the use of savings, which allow for consumption smoothing over the life cycle. Regarding the former, if we were to use a consistently defined measure of income, several of the elements included in consumption would also be included in income. For example, for a consistently defined income measure, we would also need to include the net implicit rental income from owner-occupied housing, which would contribute to income being more equally distributed. As shown in Table 3, 42.4% of total consumption

[16] Italian data do not collect information on disposable income. For Laos, for the moment being, no reliable disposable income measure could be constructed from the data. Information on per-capita adjustments can be requested from the authors.

in the U.S. is for housing. For owners, their rental equivalence can be substantial and may even exceed disposable income itself. This frequently offsets the situation of older households that no longer have mortgage payments.

The effect of including the purchase value of durables and health expenditures (the COICOP concept) on inequality varies, as shown in Table 5. For this measure, inequality slightly decreased in Mali but increased for all other countries. Laos has a relatively large increase (a difference in Gini coefficients of 0.075). Moderate increases are observed in Palestine, the U.K., and the U.S., with differences ranging from 0.030 to 0.038, while the remaining countries exhibit smaller increases. The change in the inequality rankings due to the purchase value of durables (see their significance in Table 4) highlights the limitations of including purchase values for durable goods when analyzing well-being from a consumption-based angle. However, the non-standardized definition of durable goods across countries affects the comparability of the analyses, which is why a harmonized consumption database with consistent definitions of durable goods needs to be established.

<Insert Table 5 here>

The Joint Distribution of Consumption and Income

Turning to the relationship between the LCS concept of consumption and disposable income, Figure 2 presents heatmaps illustrating this relationship. These maps are presented for the seven countries with disposable income available: Mali, Palestine, Peru, Georgia, France, the U.K. and the U.S. As before, disposable household income and household consumption expenditure are equivalized using the square root of the number of household members. The y-axis represents the household consumption quintile, while the x-axis represents the disposable household income quintile. As in our earlier results, data are weighted up producing population distributions, as opposed to household distributions. The color intensity indicates the share, with darker shades representing higher percentages of individuals concentrated in the respective joint distribution quintiles. If income and consumption were strongly correlated, most of the individuals in a given income quintile would belong to the same consumption quintile, leaving almost no one outside of the diagonal.

<Insert Figure 2 here>

The joint distribution analysis highlights a strong, though varied, relationship between income and consumption in the analyzed countries, as evidenced by the darker diagonal from the bottom-left to the top-right. This relationship is most pronounced in Peru[17] and Palestine, with 48% and 46% of individuals concentrated along the diagonal, respectively. In contrast, while the correlation in rankings is still present in France, Mali, Georgia, the U.K. and the U.S., there is slightly more dispersion, with 60 to 70% of individuals belonging to different income and consumption quintiles, indicating that some individuals with similar income levels may exhibit different consumption patterns. The concentrations of individuals in the top and bottom quintiles of the joint distributions are particularly high, relative to middle quintiles and off-diagonal cells, ranging from 8% to 13% in the lowest quantile and 9% to 12% in the highest quantile. The concentration of individuals in the highest income and consumption quintile demonstrates that they have higher adult-equivalized income and consumption than others and thus exert a relatively larger influence on overall consumption. Individuals in the top quintile also have a more varied consumption mix, as Table 3 above indicates: they spend significantly more on

[17] It is worth noting that the income concept in Peru includes goods and services received in-kind from public institutions, which are also directly added to consumption.

goods and services like recreation, sport and culture, and restaurants and accommodation, which are typically considered more discretionary than necessary in an economic sense.

While not identical to rank correlations between income and consumption, other studies have shown a strong association between income and consumption levels. This finding is stronger for individuals of working age, while the likelihood of being both income and consumption poor in most countries decreases with age (Balestra and Oehler 2023; Fisher et al. 2022). Additional analyses in Balestra and Oehler (2023) show that less educated, unemployed, and renting individuals tend to be poorest regardless of the measure used. Individuals at the top of the income distribution, on the other hand, not only spend more, but also hold disproportionate amounts of wealth, especially in the U.S. In the next section, we analyze how patterns of consumption expenditure differ across lower- and higher-income countries, as well as how the consumption of specific goods and services varies with overall consumption levels within each country.

III.4) Decomposition of Inequality by Consumption Components

Countries exhibit variations not only in their consumption mix but also in the extent to which each consumption component contributes to overall consumption inequality. To examine the contributions of each component to inequality in the LCS concept *househol*d consumption (hc) in each country, we employ a method proposed by Lerman and Yitzhaki (1984, 1985). This method, initially developed to decompose income inequality, has also been used to explain inequality in consumer expenditures in the U.S. (Garner 1993, Garner et al. 2024a,b) and elsewhere (Oliveira et al. 2016; Mookodi 2021). To the best of our knowledge, this decomposition method has not yet been applied to explain inequality in consumption expenditure in a cross-country context. In this decomposition, the Gini index of the consumption aggregate is expressed as a product of the inequality of each consumption component, the component's share of total consumption, and its correlation with the rank of total consumption expenditure:

$$G = \sum_{k=1}^{K} R_k G_k S_k$$

where R_k is the Gini correlation between consumption component k and total consumption, G_k is the Gini index of component k, and S_k is the share of component k in the consumption aggregate.[18]

The contribution of each consumption component to overall consumption inequality can be either positive or negative, depending on R_k. The Gini correlation coefficient R_k takes a negative value (up to -1) if the value of the consumption component k decreases as total consumption increases and a positive value (up to +1) if the value of that component increases with total consumption. If consumption item k is uniformly distributed across consumption levels (everyone consumes the same of that consumption component), R_k would take the value of zero. The size of the contribution of consumption item k depends on how unequally distributed the consumption component k is across the population (G_k) and how important the consumption component is with respect to total consumption (S_k). A key advantage of this method is that it allows for the separate analysis of each component's impact on overall inequality.

[18] Alternatively, it can be decomposed as the sum of concentration indices of each consumption component (C_k), weighted by their respective shares of the total consumption expenditure (S_k): $G = \sum_{k=1}^{K} C_k S_k$

To allow for better cross-country comparability of the results, we calculate the percentage contribution of each component to overall consumption inequality: $I_k = \frac{R_k G_k S_k}{G}$. In addition to this, we estimate the elasticity of each component with respect to overall consumption following Garner (1993): $e_k = \frac{R_k G_k}{G}$. Goods and services with positive elasticities can be regarded as normal goods (their share in the consumption mix tends to increase with overall consumption), while commodities with negative elasticities would be regarded as inferior. Values between 0 and 1 indicate necessity goods and services because the demand for them is relatively inelastic, while a value larger than 1 indicates that the commodity is a luxury item.

Figure 3 shows the relative contribution of various consumption items to overall consumption inequality (I_k) measured by the Gini across countries with different income levels. The results of the inequality decomposition for items like food and non-alcoholic beverages and housing largely reflect those of Table 3, because inequality figures are driven in part by the shares of each consumption component k in overall consumption expenditure (S_k). However, because food is more equally distributed across the range of overall consumption expenditure than many other consumption items (its elasticity to overall consumption is below 1), its contribution share to consumption inequality (I_k) is smaller than its overall share in the consumption mix (S_k). In high-income countries (France, Italy, the U.K., and the U.S.), housing, restaurants and accommodation services, and recreation, sport and culture contribute more to inequality than in lower-income countries, reflecting the diverse and discretionary nature of spending in wealthier nations. In upper-middle-income countries, Georgia and Peru, food still contributes substantially to inequality, but transport, information and communication and education also play important roles. In lower-middle-income countries, Laos and Palestine, the contributions to inequality are more evenly distributed across various categories, including food, transport, and housing. In the low-income country Mali, food contributes the most to consumption inequality, where access to food remains a critical issue due to conflict, climatic conditions, and economic instability in the northern regions of the country (Kimenyi et al. 2024).

<Insert Figure 3 here>

Finally, the elasticity analysis of consumption components across countries with varying income levels shown in Table 6 reveals distinct patterns in consumption behavior. In high-income countries (Italy, the U.K., the U.S., and France), necessity goods such as food and non-alcoholic beverages, information and communication and insurance and financial services exhibit elasticities between 0 and 1, indicating their demand is relatively inelastic. The same can be said for housing consumption with the exception of the U.S. which has an elasticity of 1.0. In contrast, the lower income countries Mali and Peru have housing elasticities greater than 1; this indicates a steeper increase in housing consumption relative to total consumption compared with the rest of the countries. Other consumption components with elasticities greater than 1 include recreation, sport and culture, restaurants and accommodation services, as well as education. Elasticities greater than 1 signify that the component's share in consumption increases more rapidly with overall consumption growth; such elasticities suggest that such components are luxuries. Education elasticities are particularly high in Georgia (2.6) and Mali (2.4), followed by Laos, Peru, and the U.K. and the U.S. Understanding what drives this relationship across countries warrants further investigation. For the U.S., we know that tertiary education (encompassing post-secondary, higher, and vocational education including universities, colleges, and specialized training schools) typically requires substantial tuition fees that represent a significant cost burden for many households, while in France and Italy tuition fees are comparatively

lower (OECD 2022). For Georgia and Peru varying tuition fees, lack of financial aid for students from poor families and urban-rural divide in education infrastructure are among the factors perpetuating inequalities in education expenditures (Queto et al. 2011, Li et al. 2019). The middle-income country Georgia also has high elasticities for recreation and restaurants and accommodations, underscoring their status as luxury items, whereas food and housing continue to be essential goods. In the low-income country Mali, food's elasticity close to 1 which indicates that its contribution share to overall consumption inequality is greater compared to other countries, but its alcoholic beverages, tobacco and narcotics elasticity is less than 1 and less that of other countries with the exception of the U.S. Finally, insurance and financial services show up as luxuries in all except high-income countries, where they were marked as necessities.

The decomposition findings highlight how the structure of consumption and its impact on inequality shifts with economic development, with food driving inequality in poorer countries and more diverse consumption patterns driving it in wealthier nations. The elasticity analysis also suggests that whether certain goods and services can be considered as necessities or more luxury components of consumption varies with country income, indicating not only differences in consumption preferences, but also differences in market structures and financial and geographical barriers. One such example is education, which significantly contributes to consumption inequality in low and middle-income countries, and whose consumption share is strongly related with total household consumption in all countries analyzed.

<Insert Table 6 here>

IV. Conclusion

This paper was initiated as an extension of the feasibility study by Mancini and Vecchi (2023) in an attempt to build a comparable welfare measure for a potential launch of a *Luxembourg Consumption Study (LCS) Database*. The main aim in this paper was to address in greater detail the issues associated with comparable data availability in order to conceptualize a harmonized definition for a consumption-based well-being measure, taking into account the differences between developing and advanced countries. Aligning with the goals of the Stiglitz-Sen-Fitoussi report, we anticipate that the establishment of the LCS will create greater opportunities to jointly analyze the three dimensions income, consumption, and wealth in a cross-national setting. With the addition of consumption, LIS will host all three cross-national *ex-post* harmonized databases in-house: the *Luxembourg Income Study (LIS) Database*, the *Luxembourg Wealth Study (LWS) Database* and the *Luxembourg Consumption (LCS) Database*. In the long run, this extension serves the broader goal of the Stiglitz/Sen/Fitoussi report of embedding time use data in the conceptual framework. In addition, further exploration of multidimensional deprivation could be envisaged as a future extension of this work.

However, this process needs to happen step by step. Our primary focus in this paper has been to clarify the conceptual framework for building comparable household economic well-being microdata. Mancini and Vecchi (2023) built a foundation for this work, and the experts from the BLS have complemented this perspective with an extensive expertise in defining the conceptual boundaries between consumption and expenditure in the U.S. in particular, and advanced countries more generally. The LIS team contributes mainly with its long-standing expertise in cross-national harmonization. One of the key lessons learned in conducting this study is that the purpose of the survey on which the data are based is integral in defining a complete measure of well-being. Specifically, consumption surveys do not collect fully all expenditures made by households, and expenditure surveys do not fully collect all consumption. Consumption surveys are more common in lower-income countries, while expenditure surveys are more prevalent in higher-income countries. These differences across surveys became a clear obstacle to harmonization efforts aimed at developing a framework for comparable consumption measure that can be used cross-nationally, regardless of a country's level of development. Thus, there is a need for a clear procedure to select surveys for inclusion in the LCS database. One such selection criterion might be the availability of sufficient information to reliably estimate the flow of services from shelter.

While we sought to follow the Mancini and Vecchi and COICOP frameworks, we acknowledge that information on consumption for final use is typically not available. Thus, for the LCS framework, we treat purchases or expenditures made by households as proxies for consumption as has been done in various poverty and welfare analyses. However, durable goods pose a specific challenge in consumption measurement. Although they are intended for final use by the household, the service derived from durable goods is consumed over multiple years rather than at the moment of purchase. For this reason, the expenditures for the purchase of durable goods are excluded from the operationalization of the main consumption aggregate in the LCS framework. Including such purchases would overstate consumption in the purchase year and understate it in subsequent years. However, when information is available to estimate the consumption flow of durables, it can be used to construct consumption flows. Yet, as noted by Mancini and Vecchi (2023), such information varies considerably across countries. If such information is available in household expenditure surveys, it is

typically rather limited. For example, for the U.K. and the U.S., these data are restricted to information on the stock of vehicles owned and the initial purchase price when bought new or used, and select vehicle characteristics like whether it is a car or truck. While preliminary estimates of the flow of services from cars and trucks have been produced for the U.S., additional efforts need to be made to construct consumption flows with the collected information. The expertise of national data providers is key to successfully completing this task.

The conceptual discussions in this paper, as well as the exploration of data availability, have proven that the boundary between inclusion in and exclusion from consumption is sometimes challenging to draw. This became apparent in three main examples: 1) the distinction between minor and major repairs in the residence, and the identification of which are more related to what a landlord versus renter would incur, 2) the implicit overlap of shelter insurance with estimated rent, and 3) the idealized separation of the service component of insurance from the actual premium payment (hence, the overlap with non-consumption expenditure). In addition, health and education are at the border of defining economic well-being. A key question is whether these expenditures are more related to investments as opposed to consumption. Another issue for expenditure surveys is the systematic omission of data on the value of own-produced goods for consumption. It is essential to run further sensitivity analyses to better understand the comparability bias, when home-produced goods and services are not included in the consumption-based welfare measure.

The empirical sections allowed for a first joint analysis of consumption patterns across low-, middle-, and high-income countries. Without repeating the individual findings from the sub-sections, one major point should be made. Although the explicit comparison of per-capita and square-root scales demonstrates the importance of accounting for household *economies of scale*, it is not clear which equivalence scale is more appropriate for cross-national comparisons. The availability of information on which goods are more likely consumed at the household level as opposed to the individual level could provide valuable guidance for this choice. Alternative equivalization methods and sensitivity analyses based on country-specific baskets of goods may provide a better understanding of necessary consumption needs.

The current LCS framework adopts a pragmatic distinction between health and education based on the degree to which observed expenditures reflect voluntary consumption versus constrained necessity. Health-related out-of-pocket spending is excluded from the core consumption measure because it is typically involuntary, driven by adverse shocks, and does not reliably indicate current welfare. Education expenditures, by contrast, are presently retained, as they are more often discretionary and can provide both immediate utility and long-term benefits.

However, both domains combine elements of investment and consumption, and are shaped by the institutional context. For example, in low-income settings, low education spending often reflects financial constraint rather than weak preferences, suggesting that treating tuition as consumption may misrepresent actual welfare. Similarly, health expenditures may include both preventive or discretionary services as well as emergency or shock-driven spending, suggesting that the latter should not be interpreted as welfare-enhancing consumption.

Future refinements to the LCS framework will therefore need to engage more directly with the dual nature of these categories, particularly from a cross-country perspective. Both domains also raise broader issues concerning the eventual treatment of publicly provided services and social transfers in kind. These are currently excluded but may be essential for capturing cross-country differences in

actual living standards, a well-acknowledged concern also discussed in context with income (ITWG 2021; UNECE 2011). Until these questions are further addressed and empirically explored, researchers using LCS data must remain transparent about the implications of including or excluding these expenditures in their analyses. Ultimately, the LCS framework does not claim to offer a definitive classification but rather lays a structured, versatile foundation from which a more nuanced treatment of health and education consumption can evolve.

Summary of "Issues and Choices"

Issue 1. *What is the appropriate reference unit for measuring consumption?*
Choice 1. *The reference unit is the household, defined as one individual or a group of individuals living together under the same housing arrangement.*

Issue 2. *What population should be covered when measuring consumption?*
Choice 2. *The population consists of all people living in private households who reside within the territory of the country.*

Issue 3. *Should consumption expenditure amounts be expressed in a common reference period, and if so, which one?*
Choice 3. *Yes, a common reference period is necessary. Expenditure amounts included in the consumption aggregate are annualized.*

Issue 4. *What approach is to be used to value consumption?*
Choice 4. *Consumption is valued as the expenditure amounts recorded in household surveys following the acquisition approach, with the exception of housing and durable goods. The flow of services is used for owned housing, and expenditures for durables are excluded.*

Issue 5. *Should expenditures be recorded in nominal or real values?*
Choice 5. *Expenditure amounts are recorded in nominal values.*

Issue 6. *How should users adjust for price differences over time and space?*
Choice 6. *The need to account for price differences depends on the type of analysis conducted. Intertemporal and interarea indices, adaptable to the consumption aggregate and its subcategories, are further explored to allow for adjustment to price changes over time and spatial price differences.*

Issue 7. *Should the flow of shelter services be included in consumption?*
Choice 7. *The flow of shelter services is included; self-assessed rental equivalence or imputed rent is used as the first-choice method.*

Issue 8. *How should durable goods be treated in the consumption aggregate?*
Choice 8. *Consumption flows from durables, as well as the acquisition costs, are excluded from the main consumption aggregate. A second aggregate includes vehicle service flows, and a third includes other durable service flows, where available.*

Issue 9. *Should consumption from unpaid domestic services be estimated?*
Choice 9. *Consumption from unpaid domestic services is not estimated.*

Issue 10. *Should home-grown food be included?*
Choice 10. *Home-grown food consumption is included in the consumption aggregate.*

Issue 11. *Should subsidies and rations be included in consumption?*
Choice 11. *Subsidies and rations are accounted for in the consumption aggregate as part of their relevant subcomponent, e.g., total food.*

Issue 12. *Should maintenance and repairs of dwellings be included in consumption?*
Choice 12. *Minor maintenance and repair of the dwelling are included in the consumption aggregate, while major maintenance and repairs are excluded.*

Issue 13. *Should insurance premiums be included in consumption and if so, how?*
Choice 13. *Total insurance premiums as reported by households are included in the consumption aggregate; treatment of health insurance premiums requires further consideration.*

Issue 14. *Should consumption of financial services be estimated?*
Choice 14. *Consumption of financial services is not included in the consumption aggregate.*

Issue 15. *Should consumption of health goods and services be included in the consumption aggregate?*
Choice 15. *All consumption of health goods and services, whether out-of-pocket or in-kind, is excluded from the consumption aggregate. Health insurance premiums paid by households are included.*

Issue 16. *Should consumption of education goods and services be included in the consumption aggregate?*
Choice 16. *Consumption of education goods and services, defined as household out-of-pocket expenditures, is included.*

Issue 17. *Should extraordinary ("lumpy") expenses be included?*
Choice 17. *Extraordinary expenses are excluded from the consumption aggregate, with country-specific guidance required to define such expenses.*

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Table 1. Three alternative household consumption aggregates for sensitivity analysis[19]

Equation	Description
$CA_1 = x^F + x^{NFND} + \hat{x}^{HOUS}_{self}$	CA_1 includes the housing component as self-reported rent for owner-occupiers (and actual rent for renters). No allowance for durable goods is made.
$CA_2 = x^F + x^{NFND} + \hat{x}^{HOUS}_{hed}$	For CA_2 the housing component is computed using a hedonic model for owner-occupiers (renters are still associated with actual rent). No allowance for durables is made.
$CA_3 = x^F + x^{NFND} + \hat{x}^{HOUS}_{self} + \hat{x}^{DUR}$	CA_3 is the same as CA_1, except an estimate of the consumption flow from durable goods is added.

Note: Hedonic models used to estimate $\hat{x}^{HOUS}_{hed}$ differ slightly across surveys, depending on the information on dwelling characteristics collected in each case. $\hat{x}^{DUR}$ is estimated using the "straight line" depreciation model.

[19] In their initial work Mancini and Vecchi referred to 'PCE', we updated this notion to 'CA'.

Figure 1. LCS variable list for consumption expenditure and aggregation plan

LCS Variables - Consumption

NON-DURABLE CONSUMPTION (section C_ND)

hc1	**Food and non-alcoholic beverages**
hc1_1	Food
hc1_1p	Food purchased
hc1_1o	Food own produced
hc1_1i	Food from gifts, donations, benefits and in-kind payments
hc1_2	Non-alcoholic beverages
hc1_2p	Non-alcoholic beverages purchased
hc1_2o	Non-alcoholic beverages own produced
hc1_2i	Non-alcoholic beverages from gifts, donations,benefits and in-kind payments
hc1_3	Services for processing primary goods for food and non-alcoholic beverages
hc2	**Alcoholic beverages, tobacco and narcotics**
hc2_1	Alcoholic beverages
hc2_2	Alcohol production services
hc2_3	Tobacco
hc2_4	Narcotics
hc3	**Clothing and footwear**
hc3_1	Clothing
hc3_2	Footwear
hc5	**Furnishings, household equipment and routine hh maintenance (excl. durables)**
hc5_1	Furniture, furnishings, and loose carpets (excl. 5.1.1)
hc5_2	Household textiles
hc5_3	Household appliances (excl. 5.3.1)
hc5_4	Glassware, tableware and household utensils
hc5_5	Tools and equipment for house and garden (excl. 5.5.1)
hc5_6	Goods and services for routine household maintenance
hc7	**Transport (excl. durables)**
hc7_2	Operation of personal transport equipment
hc7_3	Passenger transport services
hc7_4	Transport services of goods
hc8	**Information and communication (excl. durables)**
hc8_1	Information and communication equipment (excl. 8.1.1/.2/.3/.4/.9)
hc8_2	Software excl. games
hc8_3	Information and communication services
hc9	**Recreation, sport and culture (excl. durables)**
hc9_2	Other recreational goods
hc9_3	Garden products and pets (excl. 9.3.2.1)
hc9_4	Recreational services
hc9_5	Cultural goods (excl. 9.5.1)
hc9_6	Cultural services
hc9_7	Newspapers, books and stationery
hc9_8	Package holidays
hc10	**Education services**
hc10_1	Early childhood and primary education
hc10_2	Secondary education
hc10_3	Post-secondary non-tertiary education
hc10_4	Tertiary education
hc10_5	Education not defined by level
hc11	**Restaurants and accommodation services**
hc11_1	Food and beverage serving services
hc11_2	Accommodation services
hc12	**Insurance and financial services**
hc12_1	Insurance
hc12_2	Financial services
hc13	**Personal care, social protection and misc. goods and services (excl. durables)**
hc13_1	Personal care
hc13_2	Other personal effects (excl. 13.2.1.1)
hc13_3	Social protection
hc13_9	Other services

HOUSING CONSUMPTION (section C_H)

hchous	**Housing consumption**	*hchous = hrenta + hrenti + hmaint + hwater + helectr*
hrenta	Actual rentals for housing	
hrenti	Imputed rentals for housing	
hrentip	Imputed rental for primary residence	
hrentio	Imputed rental for secondary residences and other	
hmaint	Maintenance, minor repairs and security of the dwelling	
hwater	Water supply and miscellaneous services relating to the dwelling	
helectr	Electricity, gas and other fuels	

CONSUMPTION FLOWS FROM DURABLES (section C_D)**

hcd5	Furniture, furnishings, household appliances and equipment (COICOP 5.1.1, 5.3.1,5.5.1)
hcd6	Health assistive products (COICOP 6.1.3)
hcd7	Purchase of vehicles (COICOP 7.1)
hcd8	Information and communication equipment (COICOP 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.9)
hcd9	Recreation durables, musical instruments, pets and pet products (COICOP 9.1, 9.3.2.1, 9.5.1)
hcd13	Jewellery and watches (COICOP 13.2.1.1)

INFORMATION ON DURABLES OWNED BY HOUSEHOLD*

Furniture, furnishings, household appliances and equipment (COICOP 5.1.1, 5.3.1,5.5.1)
Health assistive products (COICOP 6.1.3)
Purchase of vehicles (COICOP 7.1)
Information and communication equipment (COICOP 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.9)
Recreation durables, musical instruments, pets and pet products (COICOP 9.1, 9.3.2.1, 9.5.1)
Jewellery and watches (COICOP 13.2.1.1)

Ownership of item....and number owned

Additional info needed to estimate consumption flow
internal - Year acquired - for each item
internal - Value of purchase - for each item

* Ownership of durable goods follow national availability.
A national-specific set of 1 to n variables are foreseen to be provided in a separated non-core file.

** flows from durable goods follow national availability.
A national-specific set of 1 to n variables are foreseen to be provided in a seperated non-core file.
The aggregated variable of all flows from durables (hcd) will be documented & made available in the core-file.

*** purchase values of durable goods follow national availability, collection of quantities and collection period.
A national-specific set of 1 to n variables are foreseen to be provided in a seperated non-core file.
The aggregated variable of all purchases of durables (hx) will be made available in the core-file. (?)

MAJOR CONSUMPTION AGGREGATES

hc	**Household consumption**	*hc = hcfood + hcnfnd + hchous*
hcfood	**Food consumption**	*hcfood = hc1*
hcfoodp	Food purchased	*hcfoodp = hc1_1p + hc1_2p*
hcfoodo	Food own produced	*hcfoodo = hc1_1o + hc1_2o*
hcfoodi	Gifts, donations, benefits, and in-kind payments in food	*hcfoodi = hc1_1i + hc1_2i*
hcfoodie	In-kind payments from employer in food	
hcfoodis	In-kind benefits from state in food	
hcfoodip	Gifts and in-kind donations from private institutions in food	
hcfoodih	Gifts and in-kind transfers from other households in food	
hcnfnd	**Non-food, non-housing and non-durable consumption**	*hcnfnd = hc2 + hc3 + hc5 + hc7 + hc8 + + hc9 + hc11 + hc12 + hc13*
hcnfndp	Non-food and non-housing purchased	
hcnfndo	Non-food and non-housing own produced	
hcnfndi	Gifts, donations, benefits, and in-kind payments in non-food and non-housing received	
hcnfndie	In-kind payments from employer in non-food and non-housing	
hcnfndis	In-kind benefits from state in non-food and non-housing (excl. StiK)	
hcnfndip	Gifts and in-kind donations from private institutions in non-food and non-housing	
hcnfndih	Gifts and in-kind transfers from other households in non-food and non-housing	
hchous	**Housing consumption**	*hchous = hrenta + hrenti + hmaint + + hwater + helectr*
hchousp	Purchased housing consumption	
hchouso	Own produced housing consumption	
hchousi	Gifts, benefits, donations, and in-kind payments in housing	
hchousie	In-kind payments from employer in housing	
hchousis	In-kind benefits from state in housing	
hchousip	In-kind gifts and donations from private institutions in housing	
hchousih	In-kind transfers from other households in housing	
hcdv	**Consumption flows from vehicles**	
hcev	**Extended household consumption including vehicle flows**	*hcev = hc + hcdv*
hcdo	**Consumption flows from other durables**	
hced	**Extended household consumption including durable flows**	*hce = hc + hcdv + hcdo*
hcp	Purchased household consumption	
hco	Own produced household consumption	
hci	Gifts, donations and in-kind payments	
hcie	In-kind payments from employer	
hcis	In-kind benefits from State	
hcip	Gifts and in-kind donations from private institutions	
hcih	Gifts and in-kind transfers from other households	
	Total energy consumption expenditure	
	Non-renewable energy consumption expenditure	
	Renewable energy consumption expenditure	
	Water consumption expenditure	

EXPENDITURES EXCLUDED FROM THE CONSUMPTION AGGREGATE

hx	Purchase value of durables goods ***	
hx5	Furniture, furnishings, household appliances and equipment (COICOP 5.1.1, 5.3.1,5.5.1)	
hx6	Health assistive products (COICOP 6.1.3)	
hx7	Purchase of vehicles (COICOP 7.1)	
hx8	Information and communication equipment (COICOP 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.9)	
hx9	Recreation durables, musical instruments, pets and pet products (COICOP 9.1, 9.3.2.1, 9.5.1)	
hx13	Jewellery and watches (COICOP 13.2.1.1)	
hhealth	**Health consumption expenditure (excl. 6.1.3)**	*hhealth = hmedi + hcare + hohealth*
hmedi	Medicines and health products	
hcare	Health care sevices	*hcare = hcareout + hcarein*
hcareout	Outpatient health care services	
hcarein	Inpatient health care services	
hohealth	Other health services	
hxinfreq	Extraordinary expenditure (weddings, dowries, funeral, birth,etc.)	
hxmrep	Major household repairs by home owners	
hxph	Purchase of houses	
hxpia	Purchase of investment assets	

Table 2. a) Breakdown of household and individual characteristics in bottom and top quintile – per-capita adjustment

	Mali ml20		Laos la12		Palestine ps17		Peru pe19		Georgia ge21		Italy it16		France fr10		U.K. uk21		U.S. us22	
	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5
Average Household size																		
Among the quintile with lowest consumption	11.8	4.3	6.9	4.0	7.5	2.7	4.1	2.2	5.1	1.6	3.4	1.6	3.3	1.7	3.2	2.5	3.9	1.5
Among the other quintiles	6.5	5.5	4.9	6.1	5.2	3.9	3.5	3.7	3.0	2.7	2.2	2.5	2.1	2.5	2.2	2.2	2.1	2.7
Household characteristics																		
1 person (core working age, 25-59 years)	0%	86%	-*	-*	1%	76%	3%	66%	0%	71%	3%	63%	6%	52%	5%	49%	5%	42%
1 person (elderly, 65 +)	-*	-*	-*	-*	3%	64%	15%	34%	1%	55%	3%	45%	3%	45%	9%	32%	3%	40%
2 person (core working age, both 25-59 years)	0%	95%	2%	71%	0%	78%	10%	39%	2%	48%	9%	36%	3%	34%	7%	40%	5%	22%
2 person (elderly, both 65 +)	-*	-*	-*	-*	0%	66%	26%	24%	0%	33%	9%	27%	6%	24%	13%	26%	6%	27%
couple with 1 or 2 dependent children below 18 years	1%	46%	7%	31%	6%	35%	14%	26%	11%	26%	23%	10%	24%	10%	23%	11%	30%	6%
couple with > 2 dependent children below 18 years	14%	18%	29%	10%	23%	11%	45%	4%	39%	10%	60%	2%	55%	3%	57%	2%	67%	1%
extended family structure	28%	15%	24%	17%	36%	13%	18%	15%	29%	10%	41%	4%	40%	6%	28%	8%	33%	9%
urban area	4%	48%	6%	41%	22%	19%	11%	24%	14%	25%	18%	25%	21%	21%	15%	24%	20%	21%
rural area	25%	12%	25%	12%	9%	25%	58%	1%	30%	12%	22%	16%	18%	17%	21%	19%	22%	16%
homeowner (mortgage free)	22%	17%	20%	20%	19%	21%	22%	19%	20%	20%	14%	23%	9%	29%	14%	26%	14%	27%
homeowner (paying mortgage)	-	-	-	-	15%	17%	1%	59%	-*	-*	18%	18%	13%	18%	22%	18%	15%	23%
not homeowner	6%	44%	21%	27%	27%	16%	15%	22%	16%	21%	35%	14%	33%	14%	24%	18%	30%	12%
Individual characteristics																		
children (below 18 years of age)	22%	17%	25%	15%	24%	14%	31%	9%	28%	11%	34%	7%	35%	7%	34%	7%	53%	3%
elderly (65 in years or above)	19%	21%	19%	21%	12%	38%	17%	27%	14%	25%	9%	30%	7%	30%	12%	27%	12%	25%
low education	19%	21%	19%	18%	20%	21%	28%	10%	33%	12%	22%	16%	21%	16%	-	-	60%	2%
medium education	5%	61%	6%	46%	16%	25%	10%	25%	21%	16%	15%	26%	16%	23%	-	-	38%	6%
high education	4%	82%	3%	59%	7%	33%	2%	50%	7%	35%	6%	42%	6%	39%	-	-	16%	21%

Notes: * asterisk marks categories of less than 30 observations in the datasets, therefore not shown.
Results for Laos and the U.K. should be interpreted with care, as the current measure of *household consumption* does not include *imputed rentals for housing*.

Table 2. b) Breakdown of household and individual characteristics in bottom and top quintile – square-root-scale adjustment

	Mali ml20		Laos la12		Palestine ps17		Peru pe19		Georgia ge21		Italy it16		France fr10		U.K. uk21		U.S. us22	
	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5
Average household size																		
Among the quintile with lowest/highest consumption	7.6	6.7	5.6	4.9	6.2	5.2	3.1	3.5	3.5	3.4	2.5	2.1	2.2	2.2	2.1	2.3	2.7	2.2
Among the other quintiles	7.1	7.3	5.1	5.3	5.4	5.6	3.7	3.6	3.2	3.3	2.3	2.4	2.2	2.2	2.4	2.3	2.4	2.5
Household characteristics																		
1 person (core working age, 25-59 years)	14%	37%	-*	-*	21%	11%	20%	25%	15%	24%	13%	29%	23%	20%	22%	22%	20%	22%
1 person (elderly, 65 +)	-*	-*	-*	-*	28%	18%	50%	14%	22%	6%	22%	20%	26%	16%	39%	11%	19%	23%
2 person (core working age, both 25-59 years)	4%	37%	8%	31%	13%	28%	25%	23%	13%	25%	17%	31%	8%	28%	13%	32%	9%	28%
2 person (elderly, both 65 +)	-*	-*	-*	-*	11%	37%	47%	14%	15%	8%	17%	24%	16%	21%	20%	20%	9%	31%
couple with 1 or 2 dependent children below 18 years	14%	29%	15%	24%	10%	30%	17%	24%	17%	24%	19%	19%	18%	21%	18%	19%	19%	19%
couple with > 2 dependent children below 18 years	20%	18%	27%	12%	21%	15%	33%	6%	27%	12%	41%	5%	34%	11%	32%	5%	34%	10%
extended family structure	21%	19%	20%	21%	33%	18%	14%	22%	23%	19%	30%	10%	36%	11%	20%	19%	29%	11%
urban area	5%	49%	7%	41%	22%	19%	11%	25%	14%	26%	18%	25%	22%	21%	15%	24%	20%	21%
rural area	25%	11%	25%	12%	9%	25%	61%	1%	30%	10%	22%	16%	15%	18%	21%	19%	22%	17%
homeowner (mortgage free)	21%	18%	20%	20%	18%	21%	23%	19%	20%	20%	15%	23%	11%	27%	22%	22%	16%	24%
homeowner (paying mortgage)	-	-	-	-	12%	18%	2%	60%	-*	-*	14%	22%	6%	27%	19%	22%	7%	28%
not homeowner	11%	35%	24%	25%	30%	14%	14%	21%	22%	22%	37%	11%	36%	10%	20%	16%	38%	9%
Individual characteristics																		
children (below 18 years of age)	21%	19%	24%	16%	23%	16%	25%	11%	22%	20%	26%	14%	24%	16%	24%	14%	29%	12%
elderly (65 in years or above)	21%	21%	20%	20%	20%	23%	29%	21%	22%	14%	19%	21%	20%	18%	26%	18%	16%	24%
low education	20%	19%	21%	17%	21%	19%	34%	8%	43%	6%	27%	12%	29%	11%	-	-	49%	3%
medium education	6%	62%	7%	45%	18%	23%	10%	24%	23%	13%	15%	25%	16%	19%	-	-	32%	8%
high education	0%	81%	2%	60%	9%	31%	3%	49%	8%	33%	5%	42%	6%	40%	-	-	11%	27%

Notes: * asterisk marks categories of less than 30 observations in the datasets, therefore not shown.
Results for Laos and the U.K. should be interpreted with care, as the current measure of *household consumption* does not include *imputed rentals for housing*.

Table 3. Percentage share of consumption categories (excluding durables) from total LCS household consumption – square-root-scale adjustment

		Mali			Laos			Palestine			Peru			Georgia		
		ml20			la12			ps17			pe19			ge21		
variable	**category**	**all**	Q1	Q5	**all**	Q1	Q5	**all**	Q1	Q5	**all**	Q1	Q5	**all**	Q1	Q5
hc1	food and non-alcoholic beverages	**69.3**	71.5	67.2	**56.5**	82.6	41.8	**33.6**	38.9	29.9	**41.8**	61.4	33.8	**20.8**	25.6	18.2
hc2	alcoholic beverages, tobacco and narcotics	**0.3**	0.5	0.3	**3.6**	1.5	4.6	**5.9**	3.4	7.3	**0.2**	0.2	0.2	**1.7**	1.4	1.9
hc3	clothing and footwear	**6.4**	5.9	6.4	**2.6**	0.9	3.2	**5.7**	3.2	6.7	**4.7**	5.8	5.2	**6.0**	3.8	6.9
hc5	furnishings equipment and routine household maintenance (excl. D)	**2.2**	2.5	2.0	**2.8**	1.1	3.6	**2.1**	2.0	2.3	**3.7**	4.1	4.7	**1.8**	1.0	2.2
hc7	transport (excl. D)	**4.7**	3.5	5.3	**11.0**	2.8	15.2	**10.8**	5.0	13.9	**7.5**	4.5	9.0	**16.9**	5.0	22.5
hc8	information and communication (excl. D)	**2.5**	1.8	3.3	**1.7**	0.6	2.1	**3.0**	2.1	3.2	**4.2**	1.9	5.3	**7.8**	6.9	6.3
hc9	recreation, sport and culture (excl. D)	**0.5**	0.3	0.5	**6.1**	0.8	9.0	**2.1**	1.2	2.9	**3.6**	3.6	4.3	**1.5**	0.6	2.3
hc10	education services	**0.4**	0.1	0.6	**1.7**	0.2	3.1	**4.2**	2.0	5.5	**5.0**	0.5	7.3	**2.5**	0.4	4.3
hc11	restaurants and accommodation services	**0.2**	0.2	0.1	**3.9**	0.9	4.7	**0.4**	0.1	0.6	**0.5**	0.8	0.5	**0.2**	0.0	0.4
hc12	insurance and financial services	**0.1**	0.0	0.1	**0.2**	0.0	0.2	**4.2**	2.2	5.0	**0.2**	0.0	0.5	**1.5**	0.7	1.6
hc13	personal care, social protection and misc. goods and services (excl. D)	**2.4**	2.0	2.3	**4.2**	0.8	6.9	**2.7**	3.0	2.6	**5.8**	5.2	6.8	**8.2**	9.2	7.4
hchous	housing consumption	**11.0**	11.7	12.1	**5.6**	7.9	5.1	**25.3**	37.0	20.2	**22.8**	12.0	22.7	**31.2**	45.6	26.0
hc	LCS household consumption (excluding durables)	**100**	100	100	**100**	100	100	**100**	100	100	**100**	100	100	**100**	100	100

		Italy			France			U.K.			U.S.		
		it16			fr10			uk21			us22		
variable	**category**	**all**	Q1	Q5	**all**	Q1	Q5	**all**	Q1	Q5	**all**	Q1	Q5
hc1	food and non-alcoholic beverages	**20.2**	25.2	17.1	**18.6**	22.8	17.7	**18.3**	26.2	13.6	**12.1**	16.9	8.2
hc2	alcoholic beverages, tobacco and narcotics	**2.0**	1.9	2.0	**3.0**	2.3	2.9	**3.0**	3.2	3.0	**1.1**	1.7	1.0
hc3	clothing and footwear	**5.4**	3.5	7.2	**4.9**	7.3	4.9	**4.7**	3.0	5.5	**2.5**	2.1	2.0
hc5	furnishings equipment and routine household maintenance (excl. D)	**3.2**	2.5	3.9	**3.2**	2.2	4.9	**3.5**	3.0	4.1	**2.3**	1.7	3.0
hc7	transport (excl. D)	**9.4**	7.1	10.5	**9.1**	7.7	11.0	**10.0**	8.3	11.2	**9.4**	7.2	9.1
hc8	information and communication (excl. D)	**2.8**	3.3	2.4	**4.6**	7.6	3.8	**6.5**	11.4	4.3	**4.5**	5.8	3.3
hc9	recreation, sport and culture (excl. D)	**5.1**	1.8	6.9	**5.8**	2.3	7.4	**11.1**	5.8	15.9	**4.1**	2.4	4.9
hc10	education services	**0.8**	0.4	0.9	**0.7**	0.4	1.0	**0.1**	0.1	0.1	**2.2**	0.3	2.7
hc11	restaurants and accommodation services	**5.7**	1.6	7.8	**6.0**	3.4	7.5	**10.3**	4.1	14.6	**8.2**	5.6	9.3
hc12	insurance and financial services	**3.3**	3.5	3.3	**8.1**	7.5	6.5	**5.3**	7.0	5.0	**8.7**	9.1	7.3
hc13	personal care, social protection and misc. goods and services (excl. D)	**4.8**	2.5	6.5	**5.9**	3.5	7.5	**5.0**	3.2	6.8	**2.4**	2.0	2.7
hchous	housing consumption	**37.1**	46.7	31.5	**30.2**	33.1	25.0	**22.1**	24.8	15.9	**42.4**	45.1	46.8
hc	LCS household consumption (excluding durables)	**100**	100	100	**100**	100	100	**100**	100	100	**100**	100	100

Notes: Results for Laos and the U.K. should be interpreted with care, as the current measures *housing consumption* and *household consumption* do not include *imputed rentals for housing*.

Table 4. Percentage share of COICOP categories (including purchase of durables in reference period) in total COICOP consumption – square-root-scale adjustment

Column (A) refers to percentage share in the consumption mix.
Column (B) shows the increase/decrease in percent as against the LCS household consumption (excluding durables).

		Mali		Laos		Palestine		Peru		Georgia	
		ml20		la12		ps17		pe19		ge21	
variable	category	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
hc1	food and non-alcoholic beverages	65.7	-5%	45.0	-20%	28.3	-16%	36.4	-13%	17.9	-14%
hc2	alcoholic beverages, tobacco and narcotics	0.3	-5%	2.9	-20%	5.0	-16%	0.1	-13%	1.4	-14%
hc3	clothing and footwear	6.1	-5%	2.0	-20%	4.8	-16%	4.1	-13%	5.2	-14%
hc5 + hx5	furnishings equipment and routine household maintenance	2.5	13%	3.7	34%	4.1	91%	3.8	1%	2.5	39%
hc7 + hx7	transport	5.1	9%	23.5	113%	17.1	58%	8.4	12%	15.8	-6%
hc8 + hx8	information and communication	3.0	21%	2.4	44%	4.6	53%	4.5	7%	6.9	-11%
hc9 + hx9	recreation, sport and culture	0.6	28%	5.0	-19%	1.8	-14%	3.1	-13%	1.3	-13%
hc10	education services	0.4	-5%	1.3	-20%	3.6	-16%	4.4	-13%	2.2	-14%
hc11	restaurants and accommodation services	0.2	-5%	3.1	-20%	0.3	-16%	0.5	-13%	0.2	-14%
hc12	insurance and financial services	0.1	-5%	0.1	-20%	3.5	-16%	0.2	-13%	1.3	-14%
hc13 + hx13	personal care, social protection and misc. goods and services	2.6	8%	4.3	2%	2.5	-8%	5.0	-13%	7.0	-14%
hchous	housing consumption	10.4	-5%	4.4	-20%	21.3	-16%	19.8	-13%	27.0	-14%
hhealth	health consumption expenditure	3.0	n.a.	2.1	n.a.	3.1	n.a.	7.8	n.a.	11.3	n.a.
	COICOP total consumption	100		100		100		100		100	
Ratio COICOP / LIS Household consumption (excluding durables & health)			**105%**		**126%**		**119%**		**115%**		**116%**

		Italy		France		U.K.		U.S.		Average
		it16		fr10		uk21		us22		over
variable	category	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	9 countries
hc1	food and non-alcoholic beverages	18.4	-9%	16.3	-12%	15.3	-16%	10.6	-12%	**-13%**
hc2	alcoholic beverages, tobacco and narcotics	1.8	-9%	2.6	-12%	2.5	-16%	1.0	-12%	**-13%**
hc3	clothing and footwear	5.0	-9%	4.3	-12%	4.0	-16%	2.2	-12%	**-13%**
hc5 + hx5	furnishings equipment and routine household maintenance	4.2	31%	5.0	55%	7.3	108%	3.9	72%	**49%**
hc7 + hx7	transport	11.6	23%	14.8	64%	16.7	66%	15.8	69%	**45%**
hc8 + hx8	information and communication	3.1	8%	5.1	10%	6.5	1%	4.6	3%	**15%**
hc9 + hx9	recreation, sport and culture	4.8	-7%	5.4	-6%	10.0	-10%	4.5	8%	**-5%**
hc10	education services	0.7	-9%	0.6	-12%	0.1	-16%	1.9	-12%	**-13%**
hc11	restaurants and accommodation services	5.2	-9%	5.2	-12%	8.6	-16%	7.2	-12%	**-13%**
hc12	insurance and financial services	3.1	-9%	7.1	-12%	4.5	-16%	7.6	-12%	**-13%**
hc13 + hx13	personal care, social protection and misc. goods and services	4.4	-9%	5.4	-9%	4.2	-16%	2.3	-2%	**-7%**
hchous	housing consumption	33.8	-9%	26.5	-12%	18.5	-16%	37.1	-12%	**-13%**
hhealth	health consumption expenditure	4.0	n.a.	1.6	n.a.	1.9	n.a.	1.2	n.a.	**n.a.**
	COICOP total consumption	100		100		100				
Ratio COICOP / LIS Household consumption (excluding durables & health)			**110%**		**114%**		**120%**		**114%**	**115%**

Notes: Percentage increase/decrease in Columns (B) is derived from greater precision as shown in the table, e.g., percentage for 'alcoholic beverages, tobacco and narcotics' is 0.272% in Table 3, while in Table 4 it is 0.2562 – thus it refers to a reduction of (0.2562 – 0.2702)/0.2702*100 = - 5.18%. For brevity, values in Columns A (and Table 3) are rounded to the first digit after the comma, and for Columns B to the integer.
Results for Laos and the U.K. should be interpreted with care, as the current measures *housing consumption* and *household consumption* do not include *imputed rentals for housing*.

Table 5. Gini of consumption aggregates using square-soot-scale and per-capita adjustment

Gini Index and country ranking - square root scale

variable	content	Mali ml20	Laos la12	Palestine ps17	Peru pe19	Georgia ge21	Italy it16	France fr10	U.K. uk21	U.S. us22
hc	household consumption	0.317	0.378	0.32	0.331	0.271	0.279	0.257	0.284	0.29
		(4)	*(1)*	*(3)*	*(2)*	*(8)*	*(7)*	*(9)*	*(6)*	*(5)*
coicop	household consumption + purchase of durable goods last year + health	0.316	0.453	0.355	0.343	0.277	0.29	0.277	0.313	0.328
		(5)	*(1)*	*(2)*	*(3)*	*(8)*	*(7)*	*(8)*	*(6)*	*(4)*
dhi	disposable household income	0.365	.	0.426	0.439	0.346	.	0.292	0.282	0.404
		(4)	.	*(2)*	*(1)*	*(5)*	.	*(6)*	*(7)*	*(3)*

Notes: Results for Laos and the U.K. should be interpreted with care, as the current measure of *household consumption* does not include *imputed rentals for housing*.

Figure 2. Share of total population along the joint distribution of household income and household consumption

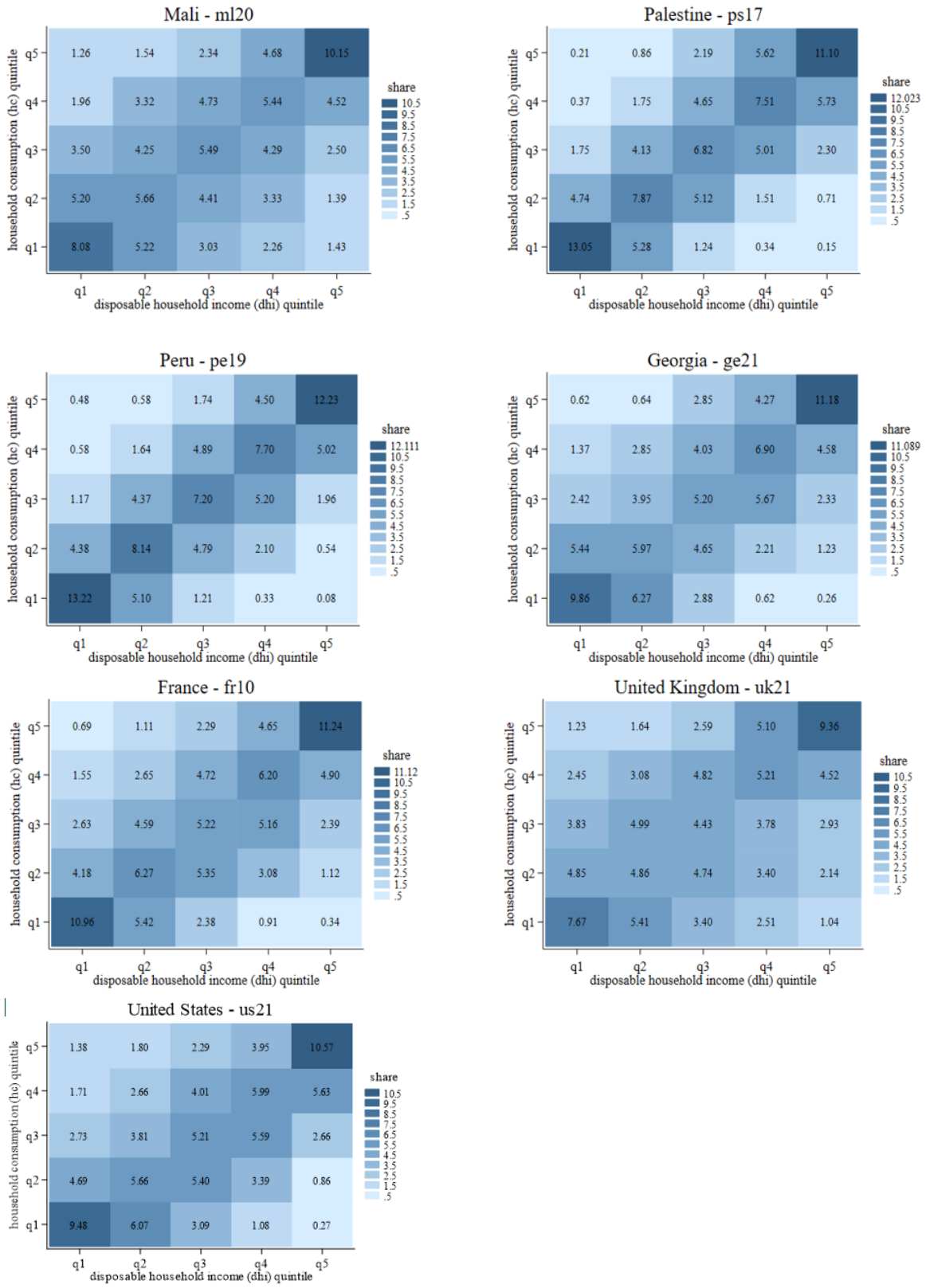
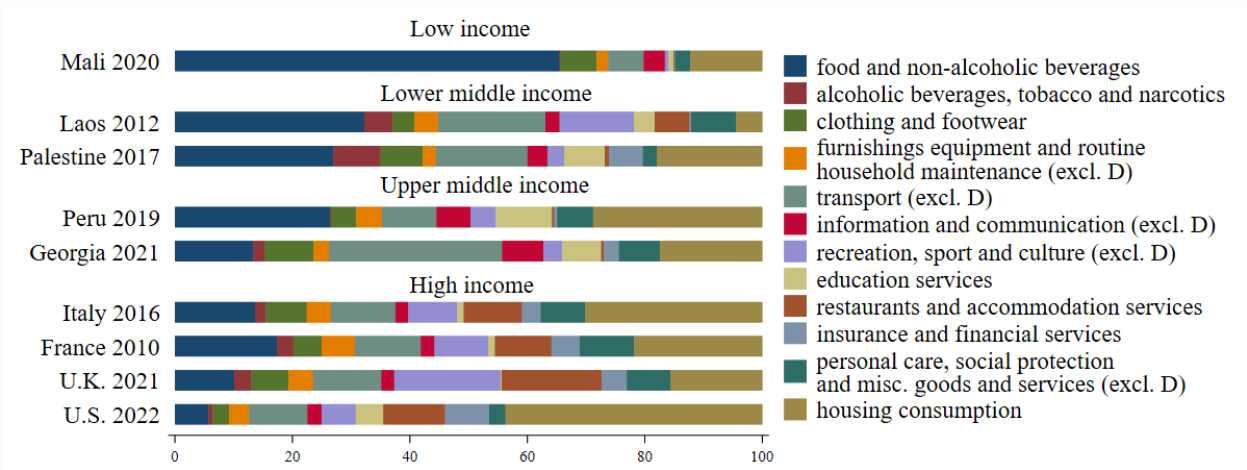


Figure 3. Relative contribution of consumption components to total consumption inequality, %



Notes: Household-level consumption expenditure is equivalized using square root of the number of household members.
Results for Laos and the U.K. should be interpreted with care, as the current measures *housing consumption* and *household consumption* do not include *imputed rentals for housing*.
Decomposition is based on Lerman and Yitzhaki (1984, 1985).

Table 6. Elasticity of consumption components

		Mali	Laos	Palestine	Peru	Georgia	Italy	France	U.K.	U.S.
variable	**category**	**ml20**	**la12**	**ps17**	**pe19**	**ge21**	**it16**	**fr10**	**uk21**	**us22**
hc1	food and non-alcoholic beverages	0.9	0.6	0.8	0.6	0.6	0.7	0.9	0.6	0.5
hc2	alcoholic beverages, tobacco and narcotics	0.6	1.3	1.4	1.3	1.1	0.9	1.0	1.0	0.6
hc3	clothing and footwear	1.0	1.4	1.3	0.9	1.4	1.3	1.0	1.3	0.9
hc5	furnishings equipment and routine household maintenance	0.9	1.5	1.0	1.2	1.5	1.3	1.7	1.2	1.5
hc7	transport	1.3	1.7	1.4	1.2	1.7	1.2	1.2	1.2	1.1
hc8	information and communication	1.4	1.4	1.1	1.4	0.9	0.8	0.5	0.3	0.5
hc9	recreation, sport and culture	1.2	2.1	1.3	1.2	2.2	1.6	1.6	1.6	1.4
hc10	education services	2.4	2.0	1.6	1.9	2.6	1.4	1.6	1.9	2.2
hc11	restaurants and accommodation services	0.6	1.5	1.9	0.7	2.2	1.7	1.6	1.7	1.3
hc12	insurance and financial services	2.0	1.5	1.4	2.2	1.7	0.9	0.6	0.8	0.9
hc13	personal care, social protection and misc. goods and services	1.0	1.8	0.9	1.1	0.9	1.6	1.6	1.5	1.2
hchous	housing consumption	1.1	0.8	0.7	1.3	0.6	0.8	0.7	0.7	1.0

Notes: Household-level consumption expenditure is equivalized using square root of the number of household members.
Results for Laos and the U.K. should be interpreted with care, as the current measures *housing consumption* and *household consumption* do not include *imputed rentals for housing*.
Decomposition is based on Lerman and Yitzhaki (1984, 1985).