Measuring Living Standards: Household Consumption and Wealth Indices

Introduction

A common theme throughout the notes in this series is the examination of disparities in a particular health variable (be it health status, or usage of health services, or payments for health care, or whatever) *across people with different standards of living*. For example, the concern might to be to see whether gaps in health outcomes between the poor and better off have grown, or whether they are larger in one country than another. This raises the question of how best to measure living standards. One approach is to use "direct" measures, such as income, expenditure or consumption. Another is to use a "proxy" measure, making the best use of available data. One popular approach in this vein is to use Principal Components Analysis to construct an index of "wealth" from information on household ownership of durable goods and its housing characteristics.

In approaching the issue of living standards measurement, it is important to be aware of the limitations and potential problems of alternative measures. This requires an understanding of not only the conceptual differences between different approaches, but also of the problems that can arise in the construction of living standards variables. With this in mind, this note has four purposes: (i) to outline different approaches to living standards measurement; (ii) to discuss the relationship between and merits of different living standards measures; (iii) to discuss briefly how different measures can be constructed from survey data; and (iv) to provide guidance on where further information on living standards measurement can be obtained.

An overview of living standards measures

Direct measures of material living standards

The most direct (and popular) measures of living standards are income and consumption. In general terms, income refers to the earnings from productive activities and current transfers. It can be seen as comprising *claims* on goods and services by individuals or households. In other words, income permits people to obtain goods and services.

In contrast, consumption refers to resources actually consumed. Although many components of consumption are measured by looking at household expenditures, there are important differences between the two concepts. First, expenditure excludes consumption that is not based on market transactions. Given the importance of home production in many developing countries, this can be an important distinction. Second, expenditure refers to the purchase of a particular good or service. However, the good or service may not be immediately consumed, or at least there may be lasting benefits. This is the case, for example, with consumer durables. In this case, consumption should ideally capture the benefits that come from the use of the good, rather than the value of the purchase itself.

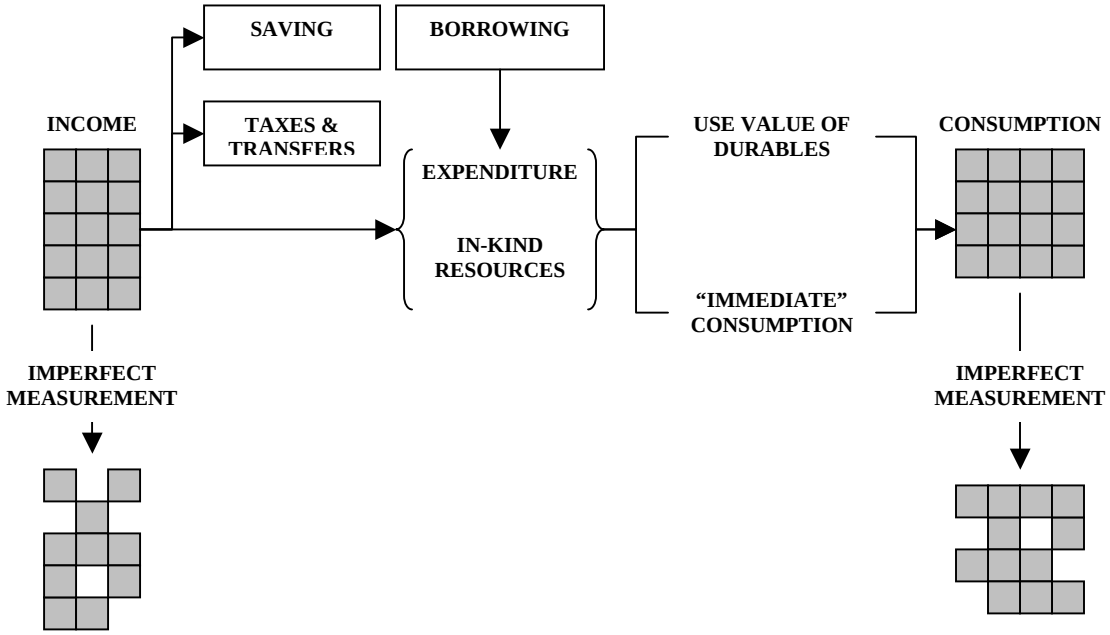
Measured income often diverges substantially from measured consumption. In part, this is due to conceptual differences in the respective terms—it is possible to save from income and to finance consumption from borrowing. Moreover, although this is not inherent in the definition of income, income surveys often exclude household production. There is a long-standing and vigorous debate about which is the better measure of standards of living. For developing countries, a strong case can be made for preferring consumption, based on both conceptual and practical considerations [1].

1. Income is only received intermittently, whereas consumption is "smoothed" over time. As a consequence, it is reasonable to expect that consumption is more directly related to current living standards than current income, at least for short reference periods. In other words, while the flow of

consumption over a period of, say, a week, or a month, may provide a good indication of the level of consumption during a full year, measured income over the same period is most likely a an inaccurate measure of income for a full year.

2. Both income and expenditure data are difficult to collect. In developed countries, where a large proportion of the population works in the formal sector, and where consumption patterns are very complex, the balance often tips in favor of measuring income rather than consumption. Even so, these surveys often have considerable problems dealing with self-employment, informal economic activities, and widespread reluctance to disclose information on income to survey enumerators. In developing countries, formal employment is less common, many households have multiple and continually changing sources of income, and home production is more widespread. In these contexts, it is generally far easier to measure consumption than income.

Figure – The relationship between income and consumption



Proxy measures of living standards

Income and consumption data are both expensive and difficult to collect, and many otherwise useful data sources lack direct measures of living standards (e.g. the Demographic and Health Surveys (DHS)). On the face of it, this precludes the analysis of socioeconomic inequalities of health, as well as testing of hypotheses relating to the impact of living standards on health and health service outcomes. Moreover, the exclusion of living standards measures in multivariate analysis raises the possibility that other coefficient estimates are rendered biased. These concerns have prompted researchers to use data on household assets and other characteristics to construct alternative measures of welfare or living standards [e.g. 2, 3, 4]. This approach has the considerable merit of requiring only data that can be easily and quickly collected in a single household interview, and, although lacking somewhat in theoretical foundations, can provide a convenient way to summarize the living standards of a household. There are three primary approaches to constructing welfare indices, which differ in how different household assets and characteristics are weighted in the overall index.[1]

[1] In regression analysis, it is also possible to include assets and other living standards proxies separately in the analysis. Although this may provide adequate control for living standards, it does not permit a ranking of households or individuals.

- **"Arbitrary" approach:** Some studies have used what may be referred to as "naïve" indices to proxy or control for living standards, often constructed as the sum of indicator or dummy variables for whether a household possesses certain assets.[2] For example, a simple "asset score", constructed by assigning equal weight to each of ten assets, has also been proposed as a "convenient proxy" in the context of the new Core Welfare Indicator Questionnaire (CWIQ) surveys.[3]

- **Principal components and factor analysis:** As an alternative to a simple sum of asset variables that are available in the data, it is possible to use statistical techniques to determine the weights in the index. The two most common approaches for doing this is principal components analysis and factor analysis.[4] These are essentially tools for summarizing variability among a set of variables. Principal components analysis seeks to describe the variation of a set of multivariate data in terms of a set of uncorrelated linear combination of the original variables, where each consecutive linear combination is derived so as to explain as much as possible of the variation in the original data, while being uncorrelated with other linear combinations. The asset index is typically assumed to be the first principal component—i.e. the first linear combination.[5] Principal components analysis suffers from an underlying lack of theory to motivate either the choice of variables or the appropriateness of the weights.

- **Predicting consumption:** In cases where complementary consumption data are available—from a past or parallel survey—it may be possible to derive weights for an living standards index through a "consumption regression". In other words, consumption data are regressed on a set of household assets and characteristics that are common to the two surveys, and coefficient estimates are used as weights. This approach draws on the techniques from the targeting literature, which seeks to identify a set of variables that predict consumption [9, 10]. Consumption regressions have also been implemented in other context, e.g. to link survey and census data for the purposes of poverty mapping. In many cases, the estimated models have considerable predictive power. However, in both of these cases, the set of household and asset characteristics has been broader than has typically been the case for assets constructed through principal components or factor analysis, including, for example, educational status, language, location, and ethnic affiliation. In other words, many of the attempts to predict consumption have included not only *indicators* and *determinants* of income and consumption.

Some practical issues in constructing living standards variables

Measuring income

Broadly speaking, income is composed of earnings from productive activities and transfers. It is customary to distinguish four main components in the measurement of income: (i) wage income from labor services; (ii) rental income from the supply of land, capital, or other assets; (iii) self-employment income; and, (iv) current transfers from government or non-government agencies, or other households. There is however some disagreement about what exactly should be considered "productive activities", and, hence, what should be included in income measures [11]. In particular, many attempts to measure income have not considered home production, although this can be conceived as a form of income. In cases where home production is considered, practical considerations often limit the scope. For example, some income measures seek to include subsistence agricultural production in the calculation of household income. In contrast, "service activities" such as child minding performed within the household are generally excluded. For home-produced goods that are either

[2] See Montgomery et al. [3], Falkingham and Namazie [5], and Morris et al. [6] for references.
[3] See http://www4.worldbank.org/afr/stats/cwiq.cfm. The CWIQ methodology also suggests that assets can be selected and weighted on the basis of a consumption regression, where the requisite data are available.
[4] For a detailed discussion of the statistical techniques, see Bartholomew et al. [7].
[5] In contrast to the principal components approach proposed by Filmer and Pritchett [2, 8], Sahn and Stifel [4] construct a welfare index on the basis of factor analysis. They argue that factor analysis is preferable to principal component method because it does not force all of the components to accurately and completely explain the correlation structure between the assets. Despite the perceived advantages, they note that the Spearman rank correlation between the principal components and factor analysis asset indices is about 0.98 for each of the samples considered.

exchanged by barter or consumed directly within the household, and for any income received in-kind, values have to be imputed.[6]

Although some surveys in developing countries—e.g. in Latin America—have collected detailed income data, attention is often restricted to employment income. This is the case, for example, in most LSMS surveys. Moreover, the quality of the data has often been poor. As a consequence, income data from these surveys have rarely been used as a proxy for living standards. If reasonably complete income data are available, a measure of total income may be a useful proxy for living standards, in particular if consumption data are not available. Where consumption data are available, it is always advisable to try to assess the validity of the relative measures. This entails comparing household income with consumption aggregates, but also requires a detailed analysis of the questionnaires and the data collection process.

Measurement of consumption and the construction of consumption aggregates

As noted, consumption is seen by many as the preferred measure of living standards. Surveys have differed a great deal in the level of detail of their consumption modules. Some surveys have included comprehensive and detailed lists of consumption items. For example the Brazilian budget survey uses a list of 1,300 items. However, most surveys are less detailed. The LSMS surveys, which have been explicitly designed and implemented with the objective of measuring living standards, have included somewhere in the region of 20-40 food items and a similar number of non-food items.[7] Because of this heterogeneity, it is not possible to provide general guidelines on how to construct consumption aggregates, or to fully account for the methodological challenges and pitfalls in this process.[8] Here, we restrict ourselves to a general overview of the steps of the process.

Most surveys collect data on four main classes of consumption: (i) food items; (ii) non-food items; (iii) consumer durables; and, (iv) housing.[9] Consumption is measured with a particular reference period in mind. Although the reference period varies, many surveys aim to accurately measure the total consumption of the household in the last year. In this way, temporary drops in consumption are ignored, while it is still possible to capture changes in living standards of a single individual or household over time. In some contexts—for example where there are important seasonal variations in living standards, it may be appropriate to focus on time periods shorter than a year. The reference period should be distinguished from the recall period, which refers to the time period for which respondents are asked to report consumption in the survey. Recall periods tend to differ for different types of goods, such that reporting on goods that tend to be purchased infrequently is based on a longer time period. The balance has to be struck between capturing a sufficiently long period so that the consumption during this period is representative of the references period (year) as a whole, and making it sufficiently short such that households can remember expenditures and consumption with reasonable accuracy. Surveys have taken different approaches to striking this balance.

In general, there are four steps in the construction of a consumption based living standards measure: (i) construct an aggregate of different components of consumption; (ii) make adjustments for cost of living differences; (iii) make adjustments for household size and composition. These steps are discussed in turn.

[6] The imputation of values for home production is discussed in more detail below.
[7] Morris et al. [6] have suggested that, in many context, aggregate consumption can be proxied by a reduced list of consumption items. They report results where a proxy constructed from 10 items was correlated with total household consumption at the r=0.74 level.
[8] There are however good sources of information on these issues. For example, Deaton and Zaidi [1] provide a detail review, and offer many examples of STATA code.
[9] Due to the difficulty in defining meaningful shadow prices, most consumption measures exclude publicly supplied goods and services, even though these services can have a big impact on material living standards. Similarly, conceptual problems in establishing the value of leisure, in particular in contexts where un- or under-employment is widespread, often makes it impractical to include leisure as a component of consumption.

Aggregating different components of consumption

The first step in constructing a consumption aggregate is to simply add up the values of different types of consumption. However, before this can be done, a common reference period has to be established for all items, and values have to be imputed where they are not available.

Food consumption: A food consumption sub-aggregate is constructed through the aggregation of (i) food purchased in the market place; (ii) food that is home-produced; (iii) food items received as gifts or remittances from other households; and, (iv) food received as in-kind payment from employers.

1. All data on food expenditures or consumption must be converted to a uniform reference period—e.g. a year. Some care is required in this, as the recall periods can sometimes vary for different types of food items. For example, some non-perishable food items are consumed infrequently. In these cases, "food consumed" during a recall period may be different from "food purchased". This should ideally be reflected in the questionnaire design, by extending the recall period for these items.
2. In some surveys, data may be available for more than one reference period. For example, some LSMS surveys collect data both on food expenditures in the "last two weeks", and on food expenditures in a "usual month". In these cases, a choice has to be made, taking into account the benefits and problems of alternative designs.
3. Many households do not only consume goods and services that are procured in the market, but also produce goods for the market or for home consumption. Home production presents both theoretical and practical challenges that relate to determining the appropriate value of home-produced goods and services.[10] In most surveys, attention is restricted to home-produced food, which is typically captured in a separate questionnaire module. The survey may collect data only on the value of different home produced food items, or on both value and quantity. If data on the value of these items are not available, it is possible to impute the value by using quantities and estimates of "farm-gate" prices.
4. Food received as in-kind payment may not be collected in all surveys, or may be collected in a different part of the questionnaire from other food-related questions. If the data are available, the values should be added to other food consumption for a sub-aggregate.

Non-food consumption: Most surveys only collect data on purchased non-food items, and do not consider home-production. Data are generally collected on a wide range of items. However, as values rather quantities are typically reported, the aggregation is straightforward.

1. Similarly to food consumption, the recall period may vary for different non-food consumption items. It may be a month for daily-use items, but considerably longer, for items that are purchased less frequently. It is therefore important to ensure that the data are converted to a common reference period.
2. It may also be advisable to exclude some non-food expenditures—e.g. tax payments, gifts and transfers to other households, lumpy expenditures (marriages, funerals, etc.). However, there are no general rules in this regard, and it will require a judgment based on considerations of the particular context, and on how the data will be used.

Consumer durables: We have noted that in the case of durable goods, it is not appropriate to measure consumption by expenditure on the item. Rather, consumption refers to the "rental equivalent" or "user cost" of the good. This can be thought of as comprising of two components: (i) the opportunity cost of funds tied up in the durable good; and (ii) the depreciation of the good. These values must generally be imputed. For this reason, most surveys collect data on the stock and characteristics of durables, rather than on expenditures on these items.

1. The most important "durable good" is generally housing. In this case, rental data are sometimes available. For households that do not report rent, a value can be imputed by using the relationship between rent and housing characteristics in the subset of households that report rent (a "hedonic

[10] In situations where a large proportion of consumption comes from home production, there is a real risk that the measures of living standards reflect assumptions about the value of different goods and services, rather than some theoretically appealing measure of welfare.

regression").[11] However, this approach can be tenuous in contexts where this subset is a small proportion of all households, or where these households are "unrepresentative" in respect of the relationship between paid rent and housing characteristics.

2. For other household durables, the imputation of values is generally done on the basis of data on date of purchase and cost of acquisition, combined with assumptions about the lifetime of the good. Alternatively, depreciation rates can be calculated using reported "current values". Procedures are described in detail in Deaton and Zaidi [12].

Adjusting for cost of living differences

Monetary estimates of total consumption must be adjusted to reflect differences in prices. This primarily concerns regional differences in prices. For example prices tend to be lower in rural than in urban areas, at least for some goods and services. However, if the fieldwork was carried out during an extensive period, it may also be necessary to take into account temporal variation in prices, even in a simple cross-section survey.

Price adjustments raise both practical and conceptual issues [1, 12]. At a practical level, a decision has to be made about the source of price data. In general, there are three options: (i) household level data on the volume and value of purchases; (ii) a dedicated price questionnaire; or (iii) price data from separate price surveys. Although household level price data have some problems—in particular in relation to the definition of units of consumption and heterogeneity in quality—it is generally seen as the preferred source. It may however be advisable to average prices over households in clusters. Price data from market or community questionnaires have also been used in many surveys. Although these data can be difficult to collect and have limitations, they are a useful substitute. Data from statistical offices or ministries of finance are often based on irregular price surveys and the spatial disaggregation of the data may be limited. This type of data should hence only be used as a last resort.

In general terms, a price index is constructed as a weighted sum of price ratios of different commodities,

$$PI = \sum_k w_k \left(\frac{p_k^h}{p_k^0} \right),$$

where K is the set of commodities, w is the weight, p^h is the price faced by the household, and p^0 is a reference price (often the median price for the respective commodity). There are different approaches to constructing a price index [12]. The fundamental differences concerns the weights that are used. For a *Paasche price index*, the weights are simply the share of each household's budget devoted to the particular good. As a consequence, the weights vary across households. In contrast, the *Laspeyres price index* uses the same weights for all households, based on budget shares of households on or near the poverty line. The results from the different approaches correspond to different theoretical approaches to the measurement of welfare, and can sometimes lead to different findings. Although the Laspeyres price index may be more convenient to calculate (the same price weights are used for all households), Deaton and Zaidi [12] suggest that the Paasche index is preferable because it tends to indicate welfare more correctly.

Adjusting for household size and composition

As noted, most surveys use the household as a unit of observation in the measurement of consumption. This is because it would be both costly and time-consuming to collect consumption data on an individual basis. It also facilitates the treatment of joint household goods such as housing, where it is not possible to assign consumption to specific individuals. Although this is convenient, we are often interested in *individual*

[11] A "hedonic regression" simply refers to the regression of rental value on a number of housing characteristics (e.g. number of rooms, type of floor, type of roof, access to water, type of toilet, etc.). The estimated relationship can be used to predict values for households where rent is not observed (but housing characteristics are).

consumption or welfare.[12] In order to get individual-level estimates, it is necessary to adjust household estimates of aggregate consumption to reflect household size and composition. This is done by using a deflator, or *equivalence scale*. In the simplest case, we can simply use the number of household members to convert household consumption into individual consumption. However, while per capita household consumption is a convenient measure of living standards, it ignores household economies of scale which arise because some goods and services that are consumed by the household have public good characteristics—i.e. they generate benefits for other household members beside the primary consumer. There may also be age- or gender-specific differences in consumption needs (in particular to reflect the consumption needs of children relative to adults).

Reflecting these concerns, equivalence scales can be constructed as some function of the household size and demographic composition. There are numerous approaches to doing this, but little consensus on what approach is most appropriate [12, 13]. There have been some attempts to come up with empirically based estimates of equivalence scales, based either on a behavioral approach [13, 14], or a subjective approach [15]. However, are more common approach is to simply define the number of *adult equivalents (AE)* in the household as,

$$AE = (A + \alpha K)^{\theta},$$

where A is the number of adults in the household, K is the number of children, α is the "cost of children", and θ determines the degree of economies of scale [16]. The challenge is then reduced to determining appropriate values for α and θ. This will of course depend on the particular context. However, Deaton and Zaidi [12] have proposed values in the region of 0.3-0.5 for α in developing countries (higher in developed countries), and near unity for θ, given the large proportion of food (private) consumption in these contexts.

Although there are convenient ways of adjusting for household size and composition, the procedure is quite arbitrary. It is therefore advisable to construct several individual consumption aggregates, and to test the robustness of findings to different assumptions concerning economies of scale and consumption needs.

Constructing an asset index

Principal components and factor analysis

An asset index can easily constructed in STATA, using either principal components or factor analysis. As differences are likely to be small, the choice of technique is mainly a matter of convenience. In the case of principal component analysis, the asset index for individual *i* is defined as

$$A_i = \sum_k \left[f_k \frac{(a_{ik} - \bar{a}_k)}{s_k} \right],$$

where a_{ik} is the value of asset k for household *i*, a_k is the sample mean, and s_k is the sample standard deviation.

Here, we use a household survey from Mozambique, which has both consumption and asset data. In order to permit a comparison with DHS data, the list of household assets and characteristics were chosen to get as close an overlap between the two surveys as possible. The first step in the analysis is to extract the principal components or factors.

```
factor elec radio fridge tv bike mot_bike car tele wat_piped wat_pumpwell
wat_pubwell wat_open wat_other wc latrine flr_dirt flr_cement flr_brick
flr_adobe flr_parq flr_other persroom [aw=wgt], pc
```

[12] Treating the household as the unit of observation also ignores the possibility that the intra-household distribution of resources can be very uneven.

Because the option `pc` is specified, this command extracts the principal components. If, instead, `pf` was specified (or no option was specified), STATA would perform ordinary factor analysis. The `factor()` option specifies the number of factors that are extracted. The `factor()` command displays a table of components, and it is possible to read off the proportion of variance in the four variables that is accounted for by the first and further components. The outputs also reports the eigenvectors associated with each component.

In the construction of living standards indices on the basis of principal components analysis, it is generally assumed that the first component captures is an adequate measure of welfare. The index is computed with the `score` command.

```
score proxy_index
```

This is essentially the sum of the included variables, weighted by the elements of the first eigenvector. In our case, consumption data are available, so it is possible to check how closely related the proxy index is with consumption. The most straightforward way of doing so is to look at the correlation coefficient.

```
corr proxy_index consump
```

In the example at hand, the correlation coefficient is 0.37. This is not unusual—living standard indices based on principal components analysis often have a weak relationship with consumption, with correlation coefficients often in the region of 0.2-0.4. In part, this may be due to a poor selection of asset variables, but there may also be deeper why consumption is only weakly related to asset ownership.[13]

Constructing quintiles and identifying the poor

It is often convenient to classify households into living standards quantiles. For example, if we want to construct a table of health service utilization by living standards quintile, we need to categorize households accordingly. The easiest way to do this is by using the `xtile` command, which constructs a new categorical variable. We can do this with either a consumption aggregate or a proxy indicator.

```
xtile quint [aw = wgt] = consump, nq(5)
```

Here, we construct quintiles. We could as easily have constructed deciles, by selecting the option `nq(10)`. Note that `xtile` permits weights. If we are working with weighted data, it is important to take this into account in the creation of living standards quantiles.

Does the choice of living standards measure matter?

So far, we have focused on the construction of different measures of living standards. We have noted that there are both conceptual and practical differences between different measures. It may be argued that different approaches simply provide a different perspective on the same issue, and that the matter is of limited concern. However, insofar as different perspectives lead to conflicting conclusions concerning the "same" issue, the sensitivity of findings to the measurement of living standards is clearly a matter of some concern. So, what evidence is there on whether the choice of living standards measure impact on findings?

- Montgomery et al. [3] show that although asset indices are often poor predictors of consumption, they may still be useful in testing hypothesis of whether consumption is a significant determinant of health outcomes, in particular where sample sizes are large and there is a lot of variation in consumption. They also find little evidence that the use of asset indices to proxy for consumption results in biased coefficient estimates on other variables of interest.

[13] Moser [17] has argued that the choice of asset indicators needs to be tailored to the circumstances of a particular context.

- Wagstaff and Watanabe [18] compare measured inequality in wasting and stunting for 19 countries (based on LSMS data), and find that for most countries the choice between consumption and the asset index as welfare measure makes little difference to the measured degree of socioeconomic inequality in malnutrition. This finding offers a degree of confidence to analysts who are concerned about the robustness of their results. However, in some contexts, the choice of welfare indicator can drive conclusions in important ways. This is the case, for example, in Mozambique, where the choice of welfare indicator has a large and significant impact on socioeconomic inequalities in service use and on the "perceived" incidence of public spending [19].

BOX – Choice of living standards measure *can* make a difference to measured inequality

Does the degree of measured socioeconomic inequality in health indicators depend on how we measure socioeconomic status? There are different approaches to addressing this question. A common starting point for looking at the distribution of health related variables by a continuous measure of SES is to compare the means of different welfare quintiles. While the distribution of services across quintiles of SES offers a good overview, the grouping of individuals into quintiles is somewhat arbitrary, and statistical testing of differences in service use across quintiles is cumbersome. A more general approach is to consider the distribution as a whole. This can done by using the concentration index (discussed in detail in Technical Note #7). The CI is a cardinal measure of inequality, which permits testing for differences between distributions.

Let h_i denote the amount of health care received by individual i (for many service indicators, this will simply be a dichotomous variable, taking the value 1 if the individual has used the service in question). For a population S, ranked by socioeconomic status, the concentration curve for h is $CC_h(p)$, where $p \in (0,1)$ is the fractional rank, or proportion of the population below a certain level of socioeconomic status. The degree of inequality, measured by the concentration index, CI_h, can be calculated as the coefficient β in the regression:

$$2\sigma_R^2\left[\frac{h_i}{\bar{h}}\right] = \alpha + \beta R_i + \mu_i ,$$

As discussed by Wagstaff and Watanabe [18], the same approach can be used to test for differences in the concentration index under different ranking variables. Specifically, the difference between two concentration indices CI_{h1} and CI_{h2}, where the respective concentration index is calculated on the basis of different ranking variables (R_{i1} and R_{i2})—for example consumption and a concentration index—can be computed by means of the regression

$$2\sigma_{\Delta R}^2\left[\frac{h_i}{\bar{h}}\right] = \alpha + \beta \Delta R_i + \mu_i ,$$

where $\Delta R_i = R_{i1} - R_{i2}$ captures the re-ranking that results from changing the measure of socioeconomic status, and $\sigma^2_{\Delta R}$ is the variance of the difference in rank. Here β is a measure of CI_{h1}-CI_{h2}. Similarly, the significance of this difference can be tested by means of the standard error of β.

Implementing this with the Mozambique data, we find that the choice of ranking variable does matter for measured inequality in health service indicators (see Table). In the case of consumption as welfare measure, the concentration index indicates statistically significant inequality in favor of richer households for all services. With households ranked by the asset index rather than consumption, the inequality is greater for all services except health center visits, for which the concentration index indicates inequality in utilization in favor of poorer households. The differences between the two concentration indices are significant for all services.

Table – Concentration indices and statistical tests for difference

	Consumption		Asset index		Difference $CI_C - CI_{AI}$	t-value for difference
	CI	t-value	CI	t-value		
Hospital visits	0.166	8.72	0.231	12.94	-0.065	-3.35
Health center visits	0.066	3.85	-0.136	-8.49	0.202	9.99
Complete immunizations	0.059	8.35	0.194	34.69	-0.135	-19.1
Delivery control	0.063	11.86	0.154	35.01	-0.091	-15.27
Institutional delivery	0.089	11.31	0.266	43.26	-0.176	-20.06

In some contexts, then, the choice of welfare indicator *can* have a large and significant impact on socioeconomic inequalities in service use and on the "perceived" incidence of public spending. As a result, we can reach very different conclusions about the "same" issue depending on how we define socioeconomic status. In cases where both asset and consumption data are available, analysts are in a position to qualify any analysis of these issues by reference to parallel analysis based on alternative measures. However, data on both consumption and assets are often not available. In these cases, the potential sensitivity of the findings should be explicitly recognized. The observed differences in measured inequality are however not particularly surprising. They reflect the fact that consumption and the asset index measure different things, or at least are different proxies for the same underlying variable of interest. In some contexts, the correlation between consumption and measured assets and household characteristics may be weak. Where the difference in ranking that this gives rise to is also correlated with the health variable of interest, the choice of indicator is likely to have an important impact on the findings.

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