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POVERTY LINES AS CONTEXT DEFLATORS: A METHOD TO ACCOUNT FOR REGIONAL DIVERSITY WITH APPLICATION TO THE DEMOCRATIC REPUBLIC OF CONGO

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This paper proposes a particular methodology to render budget data more comparable over highly diverse regions. More specifically, a set of regional poverty lines will be derived and employed as deflators to correct household expenditures for spatial differences in prices and needs. The quality of these deflators depends on the extent to which the underlying poverty lines adhere to the principles of consistency and specificity. Central to reconciling both principles in practice is our pursuit for austerity in setting poverty thresholds as well as the view that differences in social norms mainly reflect differences in social inclusion needs. The particularity of the proposed method compared to standard practice lies in the combination of: (i) the pronounced subdivision in socio-economic strata; (ii) the use of a differential calorie threshold per sector; (iii) the introduction of protein intake; (iv) the derivation of a minimal house rent; and (v) the use of an austere non-food/non-housing allowance. The impact of this method is illustrated using a budget survey of the Democratic Republic of Congo.

JEL Codes: D63, I32, R20

Keywords: consistency, deflators, poverty lines, specificity

1. Introduction

Comparing welfare levels between groups, regions, or countries by means of household data forms an essential part of applied work in welfare economics. In order to render these comparisons meaningful, a minimal number of procedures should be employed, some of which are quite straightforward, whereas others are heavily contested. Among the generally accepted procedures, we find corrections for price levels and family composition, by means of purchasing power parities and equivalence scales, respectively. The more contested corrections attempt to control for differences in diets, climate, and social needs across communities. For example, should we consider urban dwellers who are unable to acquire a cell phone to be poorer than peasants who do not (seem to) need this kind of communication system to interact with members in their community?

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More generally, where—if at all—should one draw the line in addressing context-specific needs?

In this paper, a methodology is presented to render household budget data spatially more comparable over a range of highly diverse regions. We propose to construct a series of regional poverty lines and to use their pairwise ratios as context deflators. The main challenge of this exercise relates to aligning the poverty line principles of "specificity" and "consistency." Simply stated, this challenge boils down to the twofold objective of giving due attention to the myriad of local living conditions (cf. specificity) while still ensuring comparability (cf. consistency). In a first section, this paper will refer to a theoretical framework in order to reconcile these principles, and review some of the issues when putting theory into practice. We develop our own answer to them in the next section. This proposal will then be illustrated using a budget survey of the Democratic Republic of Congo (DRC), a very diverse country in many respects, and its impact assessed. A final section concludes.

2. Pursuing Consistency or Specificity, or Both?

In poverty estimation exercises, analysts will often (implicitly) pursue the fulfillment of two general principles in order to derive meaningful poverty lines. The first principle, called "specificity" or "relevance," requires poverty lines to "constitute the existing norms or values of a society . . . [and they] should therefore reflect the particular characteristics of the area under study, such as life pattern, culture, social condition, and norms" (Asra and Santos-Francisco, 2003, p. 174). The second principle, on the other hand, is labeled "consistency" or "comparability": in order to be an equitable instrument for the design of policy interventions, poverty lines used to compare different regions or subgroups should represent the same level of welfare (Wodon, 1997, p. 72).

Adhering to both principles at the same time should not entail much of a difficulty, at least in theory *and* as long as one is willing to define welfare beyond a mere command over goods and commodities. To a certain extent, this issue of reconciling consistency and specificity refers to an old theoretical debate between Townsend and Sen discussing whether poverty is either a more relative or absolute phenomenon (Sen, 1983, 1985; Townsend, 1985). Although "relativity" is at the heart of Sen's criticism regarding the income metric, it also provided him the key element with which to state that poverty assessments should always be made in absolute terms. In this respect, the introduction of new concepts as functionings and capabilities served very well to neutralize the debate: "there is no conflict between the irreducibly absolutist element in the notion of poverty (related to capabilities and the standard of living) and the "thoroughgoing relativity" to which Peter Townsend refers, if the latter is interpreted as applying to commodities and resources" (Sen, 1983, p. 161).

Ravallion (2010, pp. 5–7) accommodated this view again in a more traditional and utility-based framework (see equation (1)): instead of anchoring poverty lines to a minimal utility level u_z, one can equally link them to a vector of minimal functionings f_z where the matching occurs through pricing a local commodity bundle that allows attaining f_z. This commodity bundle q_{ij} will also depend on

prices p_{ij} and characteristics x_{ij} of households i in region j. In algebraic terms, we obtain the following equation:[1]

$$z_{ij}^{f} = p_{ij} q_{ij}\left(p_{ij}, x_{ij}, \tilde{u}(f_z)\right) \tag{1}$$

In this view, claiming a series of poverty lines to be both mutually consistent and individually specific presumes one holds the vector of minimal functionings constant while deriving the market values of the corresponding commodity bundles typically observed in each particular context. By consequence and given the contextual diversity in prices and characteristics, it should not be surprising that consistent poverty lines are more often than not expressed by very different monetary values.

In practice however, many poverty analysts and scholars seem to experience a tension between specificity and consistency: Asra and Santos-Francisco (2003, p. 176) see a "trade-off," Ravallion and Bidani (1994, p. 76) refer to a "conflict," and Wodon (1997, p. 75) rather talks about "a matter of degree" in which poverty line methods adhere to both these principles. As a result, and depending on the particular research set-up, one of the two principles needs to be relaxed in order to assure the other. In many instances, however, the principle of consistency has been preferred over specificity as most analyses are driven by a desire to *compare* welfare levels. In other words, inequitable poverty lines seem to be worse than poverty lines that are based on information which is alien to the people involved in a comparative exercise. This tendency became more prevalent in the stream of studies that examined the changes in global poverty rates over time,[2] whose significance depends highly upon an accurate standardization of welfare indicators, thresholds, and methods for all countries and through time, but often at the expense of a clear connection with local perceptions on poverty.

For some authors however, a renewed attention to the principle of specificity is desirable. For example, Thorbecke (2004, pp. 8–9) argues that especially for poverty comparisons over a longer period of time and due to the introduction of new commodities, "more weight should be assigned to the specificity criterion . . . even though many researchers might feel uncomfortable compromising the consistency criterion." A similar argument has been made by Bourguignon *et al.* (2008, p. 10) when analyzing the progress on meeting the first Millennium Development Goal. They state that although the use of different base years (and thus different sets of purchasing power parities (PPP)) to compute national poverty lines would create consistency problems, working with only one PPP-set (adequately corrected for national inflation) would on the contrary be totally indifferent to the changes in the consumption pattern experienced by the poor. Poverty measures further away from the base year would therefore become less

[1]With respect to equation (1), two additional remarks are important. First, so far nothing has been said about the exact form of the primal utility function $\tilde{u}(f)$ and its properties—which is quite a debate on its own. Leaving this debate largely aside, we will discuss trade-offs between functionings in Section 3.2. Second, although some basic household characteristics x_i (like household composition and size) will be indirectly taken into account, this paper's focus is mainly on the correction for sector-wise characteristics x_j.

[2]For a recent overview, see Dhongde and Minoiu (2010).

specific. And finally, the issue of specificity was also very prominent in the conceptual critiques formulated against the international poverty standards. Indeed, as Reddy *et al*. (2009, p. 9) have put forward, "it is difficult to make the case that the '$1/day' and '$2/day' international poverty lines reflect the cost of achieving the real requirements of human beings." Probably in response to some of these critiques, Ravallion and Chen (2011) recently developed a weakly relative measure of poverty, which can be used as another benchmark to evaluate progress in terms of global poverty reduction (Ravallion, 2012). This more ambitious benchmark allows for the inclusion of social needs prevailing in each country. In line with these concerns and by taking differences in social norms on board, the methodology adopted in this paper will try to give due account to the specificity principle.

Yet, if the theoretical tension between consistency and specificity was already settled some time ago, why do so many authors still have difficulties in practice when pursuing both of these principles at the same time? In the following sections, the focus of this paper will be turned more to the practical realm by discussing two of the main poverty line methods and their respective departures from the theoretical ideal. In the meantime, some suggestions will be formulated to accommodate each of these critiques, which in turn will give rise to an alternative methodology elaborated in a subsequent section.

3. Challenges in Practice

As sketched out above, a set of poverty lines can theoretically be both consistent and specific as long as the first principle is claimed and held constant within the functioning space and the latter follows from the willingness to adhere to local preferences. But when moving to practice, researchers are commonly confronted with two types of problem. The first problem, the *referencing problem*, relates to the exact determination of an exhaustive list of basic functionings and their corresponding thresholds under which one is deemed to be poor (i.e., the determination of f_z in equation (1)). The second, the *identification problem*, deals with the contextual translation of these minimal functioning levels into their monetary equivalent (Ravallion, 2010, pp. 7–8). This translation entails, first, the conversion of minimal functioning levels f_z into a basket of resources and commodities q_{ij}, typically needed in a particular context x_{ij} to meet these prescribed levels. The local market value of this basket will then represent the region-specific poverty line. Figure 1 gives a schematic overview of the relation between these two types of problem and the criteria of consistency and specificity. The monetary poverty line (z) for region X is consistent with that of region Y to the extent that they refer to the same set of minimal functionings, as determined by solving the referencing problem. They are specific to the extent that it identifies the poor by translating this reference in a sufficient context-specific way.

Once the referencing problem is solved, consistency for a set of poverty lines simply follows when we hold the vector of minimal functionings constant. However, the referencing problem does remain important at the moment of empirical operationalization for two reasons, which both have to do with the underspecified nature of the capability approach (Robeyns, 2006).

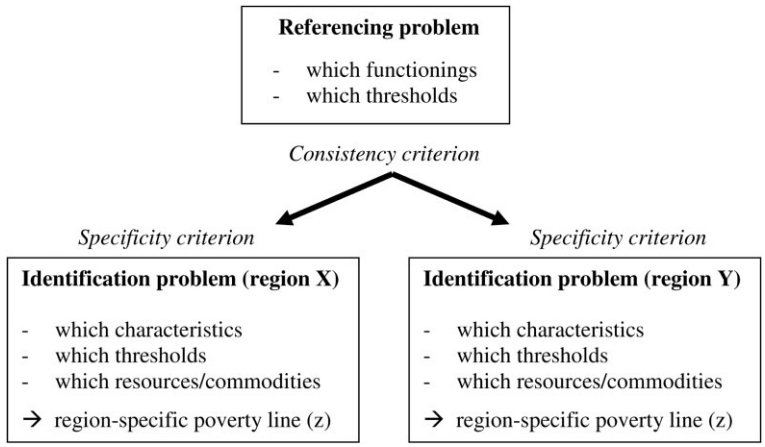

Figure 1. Consistency and Specificity versus Referencing and Identification
Source: Authors' own scheme.

First, the referencing problem can not be meaningfully solved without entering or referring to a real world and thus specific situation. Indeed, it is easily said that in order to avoid poverty one should be "adequately nourished," but the corresponding nutritional intakes are often already context-specific (for example, people in colder regions may need more calories to preserve body temperature).[3] Moreover, adequacy with respect to nutrition may stem not only from climate (or occupational profile), as more broadly accepted in the literature, but in our view also from socially induced norms governing food consumption in any particular society. As a result, assuring consistency becomes much less straightforward as it narrowly interferes with the identification problem (Osmani, 1993). In other words and following the algebraic notations used above, f_z should often be defined in close connection with x_{ij}.

Second, whereas some consensus on characteristics and thresholds exists for being adequately nourished, this is to a much lesser extent the case for other basic functionings. As a consequence, researchers will often (implicitly) use the nutritional thresholds to derive benchmarks in other dimensions. At this point, we should introduce the equiproportionality assumption (Reddy *et al.*, 2009, p. 12). Equiproportionality means that if "the reference population has a calorie content that falls below 2100 kcals by x per cent, . . . the reference population's shortfall in the expenditure necessary to achieve both the food and the non-food expenditure requirements (for capability adequacy) is also x per cent." In other words, this assumption postulates a perfect resonance between all basic functionings, so that one can derive the overall poverty status of a person or household on the basis of information on only one dimension. Yet, if this assumption does not

[3]For nutrition however, this context-specificity can in part be neutralized by focusing directly on output indicators (like anthropometric measures) instead of intake levels (Drèze and Sen, 1989). Yet, given the general availability of budget surveys, the methodology developed in this paper departed from this type of data.

apply to the same extent for different contexts or regions, the underlying vector of minimal functionings will *not* be held constant and the consistency principle will be violated (cf. infra). Unfortunately, in the absence of data and information on characteristics and thresholds beyond nutrition which would allow examining each dimension separately, one will always be obliged to rely on these kinds of assumption.

The remainder of this section will first discuss the food-energy intake (FEI) and the cost-of-basic needs (CBN) methods in more detail. This discussion will then be followed by a critical assessment of the critiques commonly formulated against their use, which will in turn form the basis to search for a slightly improved method.

3.1. *Two Main Approaches: FEI and CBN*

Once arriving in the messy world of data, one will often be forced to look for particular solutions to overcome certain data constraints. As a result, many individual poverty line methods do exist in practice. However, most of them can be categorized into one of two main approaches, namely the food-energy intake or the cost-of-basic needs method. That the choice of methods is anything but trivial is demonstrated by Ravallion's influential work on Indonesia (Ravallion and Bidani, 1994) and Bangladesh (Ravallion and Sen, 1996). Both studies discouraged the use of FEI and promoted CBN as the better alternative. Now, before examining the main critiques often put forward in the literature of poverty lines, let us first have a more detailed look at what both methods actually entail.

The FEI method is a very popular and widely used approach to convert minimal energy requirements into monetary poverty lines. In practice, this is done either by simply calculating the mean budget of households around a minimal energy threshold or by first estimating functions between energy intake and total expenditure which are then used to derive an overall poverty line based on the function's coefficients and imputed energy threshold. As such, the resulting poverty lines reflect the total amount of money people typically need in each specific context of time and place to satisfy their food *and* non-food needs. The CBN method on the contrary starts from stipulating a bundle of commodities that is deemed necessary to cover one's basic needs, after which the cost of this bundle is computed for different regions. Models of best practice will not only define the food basket in line with nutritional prescriptions, but will also assure commodities to comply with local demand behavior (Ravallion and Bidani, 1994, pp. 77–80).

True, when the CBN bundle is locally anchored to a set of minimal functionings and one is also able to price all retained commodities in each of the different strata analyzed, there can be no doubt that this method is indeed to be preferred over the FEI approach, given the connection of the latter to one functioning only. In reality however, prices for many non-food items are unreliable or simply not available, which obliges researchers to only price the food basket in each stratum and then estimate the monetary value of the non-food allowance. If this is the case, then the distinction between FEI and CBN becomes seriously blurred: both methods now take nutrition as the starting point to identify a locally

rooted poverty line.[4] Consequently, the critiques formulated against one approach will often count for the other as well, as is also acknowledged by Ravallion (2010, p. 11). Therefore, to be on the safe side when proposing another methodology, we will consider each of the main poverty line critiques, no matter which of the two generic approaches they intend to condemn.

3.2. *Five Points of Attention*

In general, five main critiques can be identified when setting poverty lines.[5] In what follows, each of these critiques will be assessed in terms of whether they relate to the referencing or to the identification problem and whether they impede poverty lines from being consistent or specific.[6] At the same time and where possible, suggestions will be made to cope with each of them.

A first point of attention concerns the use of a calorie threshold to define adequate nourishment. As most poverty lines are built in practice around a calorie threshold used as a proxy for being adequately nourished, one can reasonably raise the issue of whether and to what extent this assumption is actually valid. Indeed, the implicit connection between calories and nutritional status can be formulated as another equiproportionality assumption, this time within the nutritional dimension: that is, when a person has just enough calorie intake to maintain body weight, it is indeed simply *assumed* she will also attain the critical levels for proteins, fats, and micronutrients. This is of course a strong assumption, as several studies on food insecurity point rather to a weak correlation between food energy and diet diversity (Allen, 2000; Smith *et al*., 2006). Therefore, when nutrition is only measured through calorie intake, food poverty lines may become mutually inconsistent because the overall functioning of being adequately nourished is not necessarily held constant over different strata. However, and unlike the case of non-food dimensions of poverty (where a solution seems intractable), this referencing problem can in part be dealt with by simply introducing other nutritional information like, for example, protein intake. In other words, given existing knowledge on nutritional content for each food item, one is not obliged here to make use of the equiproportionality assumption.

A second critique relates to differences in activity levels. Whereas a farmer needs to consume 3400 kcal per day to be adequately nourished and be able to perform his occupational activities, a clerk will do with only 2500 kcal.[7] Thus, given the structural difference in mean activity levels between the urban and rural sector, applying an equal calorie threshold will obviously violate the specificity

[4]Under closer scrutiny, the FEI and CBN methods as applied in Ravallion and Bidani (1994) only differ in terms of (i) the actual content of the food basket being priced in each sector, and (ii) the type of non-food allowance being added. Indeed, the FEI method can also be simply considered as a two-step CBN procedure where the non-food allowance is based on the non-food expenditures of those households around the food poverty line.

[5]For the identification of these critiques, I will heavily rely on Ravallion and Bidani (1994) and Ravallion and Sen (1996).

[6]As highlighted above, a clear differentiation between these concepts is not always possible in practice.

[7]These thresholds are taken from FAO/WHO/UNU (1985) as published in Smith *et al*. (2006, p. 25), and relate to the recommended daily calorie intakes for a male person aged between 30 and 60 years who performs a heavy and a light activity.

criterion. Although the functioning of being adequately nourished always implicitly refers to the same level, its context-specific translation per sector does not take into account all the relevant aspects of the local circumstances when we apply equal energy thresholds to all. Ideally, this identification problem could be solved by using an equivalence scale based on a person's occupational profile. A less demanding approach to cope with this critique would be to set the critical calorie levels differently for the urban and the rural sector, such that they reflect the energy needs of their respective working populations.

Third, one can raise the typical question of to what extent revealed preferences correctly reflect existing needs and can therefore be taken for granted (Rawls, 1971; Dworkin, 1981). Moreover, it is far from clear how to differentiate needs across a number of highly diverse contexts: whereas a television set in rural Africa may possibly reflect the expensive tastes of the owner, the same television set in a more urban environment will perhaps be simply considered as a basic necessity to be part of that community. This identification issue becomes even more evident when considering mobility between sectors: if people migrate to urban areas where social needs are typically more expensive, then poverty will—ceteris paribus—increase (Ravallion, 2010, p. 10). To handle this potential problem, one could perform a revealed preference test on the original consumption bundles. And where failure occurs, arbitration can be sought in scalar corrections (Ravallion and Lokshin, 2006), if they exist, or by using information-theoretic approaches (Arndt and Simler, 2010). Here, we consider expensive tastes, if any, to be largely reflecting prevailing social norms. In turn, these norms are treated as highly inflexible and largely binding constraints faced by people; which can only be evaded by radical choices such as migration, estrangement, or religious conversion (Platteau, 2007). This view also relates to Kaplow (2006) who states that, apart from a few idiosyncratic and rather isolated cases, expensive tastes simply do not exist in the sense that is important for those concerned with distributive justice—that is, they are mostly not deliberately chosen. In line with these arguments, social norms here will be taken as given—just as one typically conceives of people as price-takers in a market economy. Although this view in theory simply corresponds to adding another constraint to the maximand, we are unable to derive a function describing social norms. Consequently, some degree of potential inconsistency may still remain valid, be it on a more limited scale and mostly generated through aspects of mistake, weakness of will, and other decision-making infirmities (Kaplow, 2006, pp. 422–24). A technical accommodation of the latter aspects can be found in keeping the strata under comparison sufficiently large while fixing a poverty line. We also discarded the demand behavior of the richest and poorest layers in society. The underlying argument followed here is that *individuals* may indeed still suffer from these kinds of infirmities (and those at both extremes of the income distribution more than others), but that a similar label becomes increasingly inappropriate for communities as a whole.

A fourth critique refers to the differences in the provision of public goods between strata. The typical example is based on the linkage between the awareness-raising capacity of schooling and health care on the one hand and the consumption of more expensive calories on the other (Ravallion and Sen, 1996, p. 767). Indeed, if people are better informed about the value of a more diversified diet, they will

probably opt to pursue one, even with it being more costly. As a result of this, and linked to the discussion above, poverty lines again may become mutually inconsistent since the presence of such a kind of public goods in one stratum may render the equiproportionality assumption within the nutritional dimension less valid compared to any other stratum deprived of these services. However, since this critique actually boils down to the same arguments made under the first point of attention (i.e., the limitation of calories as a proxy for overall nutrition), similar suggestions like expanding the nutritional information basis can be made to cope with it. Besides, for all other public goods that contribute to the achievement of functionings beyond nutrition, this critique does not seem to apply.

And finally, there is the issue of relative prices between food and non-food goods which may complicate the equiproportionality assumption to hold in practice. As mentioned above, this kind of operational assumption is often introduced in order to derive critical levels for non-food functionings based on minimal food requirements. To see this referencing problem, one should at least agree that some substitutability exists at certain levels of commodity ownership. Even if "dimensions of human development are *nonhierarchical*, *irreducible*, *incommensurable and hence basic kinds of human ends*" (Alkire, 2002, p. 186), which involves the functioning space to be fully L-shaped, trade-offs generally exist in the commodity space. For example, consider Figure 2 where the functioning vector f_1 (let's say "being free from hunger and disease") can be achieved by different combinations of nutrition (Q_F) and access to health care (Q_{NF}), and where the actual choice will eventually depend on the relative prices (p_i) for food and medicine observed in both strata. Therefore, if trade-offs exist and relative prices are substantially different from one context to another (as they often are between urban and rural areas), the consistency criterion for a set of poverty lines will often be violated. Indeed, in this

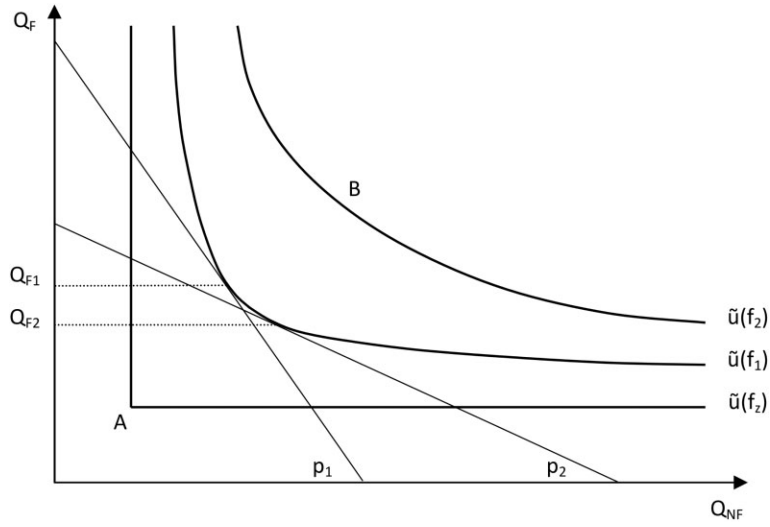

Figure 2. Relative Price Problem

Source: Authors' own scheme, partly inspired by Arndt and Simler (2007).

case different levels of nutrition (Q_{F1} and Q_{F2}) will correspond to the same overall welfare status $\tilde{u}(f_1)$.

Yet, one can reasonably argue that trade-offs between food and non-food goods are quite limited around the poverty threshold ($\tilde{u}(f_z)$), and become more important with higher levels of welfare ($\tilde{u}(f_2)$). Indeed, when a person is very poorly nourished (and consumes, let's say, bundle A), it will be difficult to compensate for her food deprivation with another kind of commodity—even if we provide her with abundant quantities of the latter. On the other hand, lowering food intake at bundle B may increase the probability of getting ill, which may be compensated for by additional health care. In other words, and somewhat conforming to the irreducible nature of dimensions of human development, one can reasonably assume preferences to become nearly Leontief at lower levels of utility. A logical suggestion to cope with this consistency problem is then to focus on these lower ends of welfare by setting the nutritional thresholds quite restrictively and by adding a more austere non-food allowance. The suggestion to work with more austere poverty lines is solely driven by its capacity to reduce the inconsistency produced by differences in relative prices. Therefore, we will revert to a more traditional threshold for profiling poverty after having deflated all budget data on the basis of these poverty lines.

3.3. *Proposed Method*

The main objective of this paper is to propose a methodology to make budget data more comparable across highly diverse regions. In order to do so, expenditure data will be corrected by using deflators which are based on specific but functioning-consistent poverty lines. From the discussion above, it should have been made clear that a lot of consistency problems (i.e., problems with holding the set of minimal functionings constant) are due to either theoretical or data constraints. Indeed, if we could agree on a set of basic welfare functionings, the characteristics wherein they are measured and the corresponding critical values under which one is deemed to be poor, and if all these elements are also surveyed and included in a dataset, then the computation of specific and consistent poverty lines would be rather straightforward. While these constraints are often very real, one could sometimes make better use of the available data. In the section above, some headway was already made in order to better accommodate each of the five main critiques commonly issued. In what follows, these suggestions will be worked out in more detail.

First, in order to cope with erratic consumption behavior resulting from either expensive tastes or choices made under distress, the proposed method will not consider the first and tenth decile in each stratum, as ranked by total consumption per equivalent adult. These two deciles will only be discarded for the computation of deflators; not for the poverty analysis performed on the deflated budget data thereafter. In addition, one should also try to strike a balance between strata being too large and strata being too small, so as to respect specificity on the one hand and overcome sensitivity to outlier preferences on the other. Since very few recommendations exist on this matter, those made will be mainly driven by data constraints. This issue on ideal size of strata will be taken up when applying the proposed method to a real-world dataset.

With regard to minimal calorie requirements, we opt for more austere energy thresholds in order to reduce the sensitivity of the method to relative price differences between regions. Indeed, austere poverty levels make trade-offs within the commodity space less likely and thus the equiproportionality assumption more likely to hold. At the same time, energy needs between people in different sectors are often different, depending on the occupational structure of their inhabitants. How much discrepancy in thresholds one should apply in order to assure that the average villager is as adequately nourished as the average urban dweller, is all but clear given the rare theoretical or practical guidelines on the subject. Therefore, this method relies heavily on the work done by the national poverty agencies of India. Following an analysis of the age–sex–occupational structure in both sectors, the minimum rural energy needs were set 300 kcal higher than the urban equivalent (Government of India, 1993, pp. 9–10). Consequently, we will take the difference of 300 kcal at face value, but we scale both thresholds in line with the standard requirements for light (2500 kcal) and moderate (2900 kcal) activity.[8] The choice not to consider energy needs for heavy work is again inspired by the pursuit for austerity. As a result, the proposed method will apply thresholds of 2550 kcal for the urban sector and 2850 kcal for rural areas, both expressed per day and per male equivalent adult aged between 30 and 60 years. As such, an allowance is made for the fact that not all urban dwellers have sedentary jobs, nor do all villagers perform jobs representing a moderate or heavy activity.

Next, a straightforward strategy to increase consistency within the nutritional dimension is that of broadening the informational basis beyond calories. In fact, if one is able to derive calorie intake per equivalent person, one should be equally able to do this for other types of intake as well, by simply considering other food composition tables. For the methodology proposed here, information on protein intake will be introduced and thresholds set according to standard practice. As a result, calorie *and* protein intake per equivalent adult will form the basis for setting the food poverty line. More specifically, and since very little generic information is available about local food habits in the DRC in order to delimit the food bundle, this food poverty line method will rely on a FEI-like regression between nutritional intakes on the one hand and food expenditures on the other.

Without a doubt, the quality of this exercise will depend heavily on the quality of measures used to approach food security, which after all remains an elusive concept (Barrett, 2010). Since the measures employed in this paper are "derived" from food consumption data, as opposed to more fundamental measures (Webb *et al.*, 2006), several practical challenges apply. First, the quality and spatial granularity of price data is a crucial variable in knowing the exact amount of food purchased by households. In the case of Congo's 1-2-3 Survey, this was a major challenge given the widespread use of varying local selling units (like sakombi and ekolo) and the substantial reliance on home-grown food (especially in rural areas). Further, food composition tables are often generic for each food item and therefore largely insensitive to local crop varieties observed in a particular country. And finally, apart from decisions on intra-household allocation of food, its exact

[8]Again, these thresholds were taken from FAO/WHO/UNU (1985) as published in Smith *et al.* (2006, p. 25), and refer to adult males between 30 and 60 years old.

utilization and preparation will also very much determine the individual nutritional status attained.

Furthermore, we estimate a context-specific and consistent measure of housing quality. The equiproportionality assumption would suggest that we simply consider the context-specific mean house rent per stratum of those households whose average nutrition is around the critical thresholds for calories and proteins. If, alternatively, we define one national set of minimal housing criteria and allow prices to vary per stratum, this will certainly violate the specificity principle, because regions characterized by different climates obviously necessitate different types of housing to be equally sheltered. Therefore, we define socio-specific climate zones whose size is deliberately set larger than the stratum size for which poverty lines are derived. Then, for each housing zone a set of minimal housing characteristics is extracted through linkage with the nutritional benchmarks, after which the cost of these housing characteristics is calculated per stratum. The decision to estimate house rents separately from other non-food expenditures is not only driven by a concern to account for differences in (social) climate, but also inspired by the theoretical ideal which favors the pricing of *all* relevant functionings in order to avoid relying on assumptions like equiproportionality. As such, this feature of the method is less informed by the several points of attention listed in Section 3.2.

And finally, for the remaining non-food allowance (i.e., the budget to cover all needs beyond nutrition and shelter), a further neutralization of the relative price problem is pursued by adopting the austere non-food procedure as introduced by Ravallion and Bidani (1994). According to this procedure, the non-food allowance is defined as that part of the budget which is "spent on non-food goods [apart from house rents] by households that are able to reach their nutritional [and housing] requirements but choose not to do so" (pp. 87–88). This procedure is said to set a lower bound to the range of acceptable poverty lines, which is exactly what we need in our pursuit for austerity.

4. Data and Application

In this section, the methodology explained above will be applied to a household dataset covering more than 12,000 Congolese families. The household budget survey was part of the 1-2-3 Survey (2004–05), executed by the DRC National Institute for Statistics (2004) and supported by Afristat and Dial. The survey served as an important source for the country's first Poverty Reduction Strategy Paper (RDC, 2006). Given its nationwide scale and acceptable quality, this survey offers a unique opportunity to assess living standards across this vast country (see Figure 3 for more detail on the spatial coverage of this survey). The DRC is very diverse not only by nature, a logical concomitant of its continental dimensions, but also by history. Whereas the first element relates to the many cross-cutting lines one can draw between ethnic groups, language areas, climate zones, dietary regimes, and prices paid for commodities, the latter rather refers to the very recent and conflict-ridden past of the country.[9] Indeed, the period

[9]See Marivoet (2009) for more detail about these multidimensional lines, and how the ongoing decentralization process in the DRC may be an answer to this reality.

Figure 3. Spatial coverage of 1-2-3 Survey (2004–05) in the DRC

Notes: Currently, there are 11 provinces in the DRC. For the practical organization of the 1-2-3 Survey (2004–05), the country has been subdivided into 26 pools. The numbers on the map indicate the number of households surveyed in each locality.

Source: Based on the 1-2-3 Survey (2004–05). The map itself has been created using Quantum GIS and geographic data from Africover.

from 1996 to 2006 has been characterized mainly by two devastating wars (Reyntjens, 2009), which reshaped existing contours or added even more divisions to the already pronounced fragmentation of the country. Therefore, given this very dense mosaic of different local realities in the DRC, pursuing comparability by accounting for geographical diversity is not only an exciting issue for researchers, but also a real necessity for policy makers.

In what follows, a detailed account will be presented of the exact application of the proposed method to the 1-2-3 Survey, which will result in a set of 56 context deflators. Then, we compare the results of this particular methodology with alternative techniques on the geographical distribution of welfare.

4.1. *Application of the Proposed Method to the 1-2-3 Survey*

In this section, we will enumerate in detail all steps performed on the 1-2-3 Survey in order to derive a set of region-specific poverty lines.

1. Determination of total consumption per equivalent adult. We considered all expenditures under the heading "total consumption" minus savings, investments, and gifts to others, but increased by gifts received in kind and imputed house rents. In order to control for household composition and size, the following equivalence scale and parameters were used to compute the number of equivalent adults per household: $N_{EQ} = (N_A + \delta N_C)^{\theta}$, in which N_{EQ} = number of equivalent adults, N_A = number of adults, N_C = number of children, $\delta = 0.7$, and $\theta = 0.85$ (Drèze and Srinivasan, 1997).[10]
2. Delimitation of "ideal" stratum size. Constrained by the available geographical data comprised in the 1-2-3 Survey, 56 strata were identified by crossing the enumeration areas used with information on sector type. Whereas these enumeration units were used to logistically organize the execution of the survey, and therefore offer an indication of transport facilities and thus relative market integration, the type of sector could tell us something about the relative social needs experienced by families in villages, and smaller or larger cities. As such, each of the 56 strata (except two) comprised more than 100 households, which should be sufficient for the procedures to follow. In this respect, it is also important to affirm that this delimitation is merely a vehicle to ultimately derive a set of cost-of-living indices, as it is not necessarily representative for allowing welfare statements in-between these strata.[11] At this stage, one can also discard the 1st and 10th deciles in each stratum in an attempt to lower the method's sensitivity to outlier consumption behavior.
3. Derivation of the food poverty line. Over a smaller interval (±1000 kcal and ±30 proteins), 56 separate multiple regressions were run between the logarithm of daily food expenditure per equivalent adult F_{ij} and the logarithm of daily caloric and protein intakes per equivalent adult,[12] respectively denoted by cal_{ij} and $prot_{ij}$. After obtaining the region-specific parameters α_j using equation (2) (where e_{ij} is a random error term), the daily calorie threshold of 2550 kcal (urban) or 2850 kcal (rural) and a daily protein threshold of 49 grams (no sector differentiation is necessary for this type of nutrition) were introduced in each of the regression functions, in order to obtain a set of 56 region-specific daily food poverty lines.

[10]Although the reasoning behind the use of equivalence scales is quite straightforward, the exact form and parameter estimates are often much less so and ultimately subject to debate. Moreover, in the third step of our method a set of regressions will be run between food expenditures and nutritional intakes, which marks a sort of conceptual incongruity as economies of scale for food are typically much lower than for non-food.

[11]Indeed, the sample design of the 1-2-3 Survey only allows statements to be strictly representative per sector type within each of the 11 provinces. Yet, since statistical requirements for cost-of-living indices are often less demanding, a spatially more refined approach could be pursued.

[12]The equivalence scales for caloric and protein intake were again based on FAO/WHO/UNU (1985) as published in Smith *et al.* (2006, p. 25). For energy, intakes for moderate activity were considered.

$$\log(F_{ij}) = \alpha_{0j} + \alpha_{1j}\log(cal_{ij}) + \alpha_{2j}\log(prot_{ij}) + e_{ij} \quad \text{for all households } i \text{ in sector } j = 1, \ldots 56 \tag{2}$$

4. Allowance for housing needs. By using topographical information[13] together with data on sector type, nine different housing zones were identified for the DRC. Afterwards, for each of these zones the same procedures of point 3 were repeated in order to obtain *zone*-specific daily food poverty lines (in this case zone $j = 1, \ldots 9$). These food poverty lines were then used to identify the characteristics of a poor house in each of the nine zones. More specifically, the median observations for housing, floor, roof, and toilet type were retained of those households in each zone of which the food expenditures fell within a 10 percent interval above or below the zone-specific food poverty line. Subsequently and according to the zone to which the stratum belongs, the mean house rent per stratum was computed for all houses that matched all four poor housing characteristics. And finally, these region-specific house rents were added to the food poverty lines derived under point 3 to obtain 56 food–rent poverty lines.
5. Allowance for other non-food needs. Similar to Wodon (1997, pp. 96–97) who found the parametric procedure to be less stable, a non-parametric procedure was followed to compute the austere non-food allowance for each of the 56 strata. In principle, this approach equals the one introduced by Ravallion and Bidani (1994), but imposes no functional form on the Engel curve. More specifically, the overall mean of non-food consumption (but house rents excluded) was computed for those households which fall within 10 slightly increasing intervals defined over the intersection point where the food–rent poverty line equals total consumption. As such, more weight is given to the non-food needs of those households closest to the intersection point. Then, simply adding this non-food allowance to the food–rent poverty line obtained under point 4 results in a set of 56 region-specific poverty lines.

Now, to the extent that the strategies proposed to reconcile the principles of consistency and specificity (see Section 3.3.) are sufficiently conclusive, one can use the set of 56 poverty lines as deflators to correct the budget information comprised in the 1-2-3 Survey for contextual differences between strata. Table 1 provides an overview of these 56 poverty lines along with their corresponding deflators. By using Kinshasa as the numeraire, all deflated budget data should be read accordingly.

4.2. *Impact of Proposed Method*

In this final section, the impact of the proposed method is illustrated by comparing the welfare profile that results from this proposal with distributions that would occur under alternative methods to correct for regional diversity. The following three methods have been retained for this comparative exercise: (i) the

[13]Roughly, the following three topographical regions could be identified: the Congo River basin, and the eastern and the southern highlands.

TABLE 1
PROPOSED POVERTY LINES AND DEFLATORS OF 56 STRATA

	Place of Residence					
	Big Cities		Small Cities		Villages	
Pool	Z in CF[b]	Deflator	Z in CF[b]	Deflator	Z in CF[b]	Deflator
Kinshasa	492.81	1.000				
Mbanza-Ngungu			394.67	0.801	246.65	0.501
Matadi	396.80	0.805	332.17	0.674	199.73	0.405
Bandundu	233.49	0.474			165.12	0.335
Kikwit	201.62	0.409			132.74	0.269
Kenge			298.52	0.606	185.26	0.376
Tembo			476.15	0.966	309.48	0.628
Mbandaka	284.25	0.577			114.73	0.233
Boende					159.78	0.324
Lisala			155.96	0.316	109.37	0.222
Gbadolite	155.23	0.315			105.61	0.214
Kisangani	277.31	0.563			148.62	0.302
Isiro			199.09	0.404	122.93	0.249
Bunia			383.16	0.778	219.38	0.445
Goma	290.55	0.590	208.75	0.424	183.44	0.372
Kindu	296.24	0.601	243.50	0.494	257.19	0.522
Kisangani2[a]					202.04	0.410
Bukavu	391.72	0.795	279.82	0.568	313.21	0.636
Lubumbashi	285.58	0.579	134.71	0.273	165.18	0.335
Kamina					187.53	0.381
Manono					99.13	0.201
Kolwezi	285.33	0.579			211.26	0.429
Dilolo					191.86	0.389
Mwene-Ditu	273.35	0.555	214.09	0.434	235.07	0.477
Mbuji-Mayi	352.18	0.715			277.89	0.564
Kananga	261.68	0.531	238.00	0.483	239.77	0.487
Tshikapa	403.83	0.819	212.80	0.432	361.25	0.733

Notes:
[a]The pool of Kisangani also served to survey some of the villages in the province of Maniema, therefore giving rise to a separate stratum.
[b]The abbreviation "Z in CF" stands for "poverty line in Congolese Francs."
Source: Authors' own computations based on the 1-2-3 Survey (2004–05).

simple use of nominal consumption levels; (ii) the use of a GEKS-Fisher multilateral index to align purchasing power between each of the 56 strata; and (iii) the use of deflators based on 56 poverty lines following different versions of the FEI method.

The first method, which imposes no spatial correction whatsoever, can be considered of little value given the country's pronounced diversity as highlighted above. In fact, the underlying assumption for those relying on this method is that 500 CF[14] in Kinshasa generates a similar level of welfare as the same amount of money does in any other part of the country. However, notwithstanding the doubtfulness of this assumption, the Congolese government has largely made use of it to determine the country's strategy for growth and poverty reduction[15] (RDC, 2006).

[14]Approximately, 400 CF equaled US$1 in 2004.
[15]See Marivoet and Keje (2011, pp. 9–14) for more details on the exact procedures and corresponding critiques.

The second method of comparison is a correction based on a GEKS-Fisher index, as derived from food prices p_g and shares s_g observed in each of the 56 strata. This index equates the geometric mean of all possible indirect (or bilateral) Fisher indices from the reference stratum (Kinshasa) to the stratum in question. The first formula in equation (3) refers to the set of bilateral Fisher indices; the second entails the GEKS procedure to make these indices transitive or multilateral. The GEKS method was first proposed by Gini (1931). See Deaton and Heston (2010, pp. 6–8) for further details.

$$P_F^{cd} = \sqrt{\left[\sum_{g=1}^{N} s_g^c \frac{p_g^d}{p_g^c}\right]\left[\sum_{g=1}^{N} s_g^d \frac{p_g^c}{p_g^d}\right]^{-1}}; \quad P_F^c = \left(\prod_{j=1}^{M} P_F^{1j} P_F^{jc}\right)^{\frac{1}{M}} \tag{3}$$

$$\text{for all goods } g \text{ observed in sector } j = 1, c, d, \ldots 56$$

Roughly stated, this GEKS-Fisher price index can be considered as a proxy of the CBN method, where the same basket is commonly priced in different strata. However, in this case the basket comprises only food items and it is cross-weighted based on the mean shares per item observed in each stratum. As such, this price index has no explicit connection with poverty levels, in contrast to the CBN method. However, with a poverty incidence for the DRC between 60 and 65 percent, one can assume the mean consumption pattern to be quite close to that of a person around the poverty line.

Third, the proposed method will also be assessed in comparison with the standard FEI method and a number of slightly improved versions in order to be able to distinguish which features of our method empirically drive the changes in welfare profile. More specifically and for each of the 56 strata, a regression function is estimated between the logarithm of total consumption Y_{ij} and the logarithm of calorie intake cal_{ij} (see equation (4)), after which a unique calorie threshold is used to derive the total consumption one typically needs in each stratum in order to meet both food and non-food needs (let us call this version FEI_1). A second version repeats this procedure but applies different calorie thresholds for the urban and rural sector, similar to the proposed method explained above (i.e., FEI_2).

$$\log\left(Y_{ij}\right) = \alpha_{0j} + \alpha_{1j} \log\left(cal_{ij}\right) + e_{ij} \tag{4}$$

$$\text{for all households } i \text{ in sector } j = 1, \ldots 56$$

And finally, this latter procedure can be further enhanced by also entering protein information into the regression function (equation (5)), which gives rise to a third version (i.e., FEI_3). As such, this comparative exercise will allow us to examine whether the same problems of inconsistency plaguing the FEI method also apply to the DRC case, to what extent the proposed method is able to avoid them, and which feature exactly can be held responsible for it.

$$\log\left(Y_{ij}\right) = \alpha_{0j} + \alpha_{1j} \log\left(cal_{ij}\right) + \alpha_{2j} \log\left(prot_{ij}\right) + e_{ij} \tag{5}$$

$$\text{for all households } i \text{ in sector } j = 1, \ldots 56$$

Table 2 presents the mean daily consumption levels per province split into urban and rural areas, subsequently for each of the methods introduced above. Let us

TABLE 2

IMPACT OF PROPOSED METHOD

	Daily Mean Consumption per Equivalent Adult (CF)											
	No Spatial Correction		GEKS-Fisher (56 strata)		FEI_1[a] (56 strata)		FEI_2[b] (56 strata)		FEI_3[c] (56 strata)		Proposed Method	
Province	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Kinshasa	561	–	561	–	561	–	561	–	561	–	561	–
Bas-Congo	427	271	817	711	655	890	648	814	594	667	555	607
Bandundu	387	164	752	575	747	735	739	669	631	546	552	466
Equateur	303	150	876	898	845	895	841	813	824	724	737	649
Orientale	339	252	746	882	639	991	631	893	546	797	511	698
North Kivu	466	235	1359	782	887	940	881	851	807	752	811	631
Maniema	453	312	1202	992	1005	926	983	843	912	723	812	667
South Kivu	321	200	583	429	595	473	580	430	621	392	462	314
Katanga	441	258	969	827	955	1097	958	982	1023	855	852	735
Kasaï-Oriental	504	325	912	679	957	858	951	774	983	685	786	599
Kasaï-Occidental	416	383	768	601	860	818	844	736	812	704	739	601
Total	466	243	784	737	745	877	742	792	739	696	662	603

Notes:

[a]FEI_1 refers to the most standard application of the food-energy intake method. This method first entails the estimation of a regression function between the logarithm of total consumption and the logarithm of calorie intake, after which a unique calorie threshold (i.e., 2700 kcal) is used to derive the total consumption needed in each stratum to meet both food and non-food needs.

[b]FEI_2 repeats the procedure of FEI_1 but applies different calorie thresholds for the urban and rural sector, respectively set at 2550 kcal and 2850 kcal.

[c]FEI_3 further extends FEI_2 by adding an extra variable on protein intake to the regression function for each stratum.

Source: Authors' own computations based on the 1-2-3 Survey (2004–05).

start with the first method that simply considers nominal consumption levels, and which implicitly assumes prices and needs to be unique throughout the DRC. Under these severe assumptions, one can easily observe that the urban sector is almost twice as well-off as the rural sector, with a daily mean consumption level of, respectively, 466 CF and 243 CF. Within the former sector, Kinshasa and to a lesser extent the cities in the diamond-rich province of Kasaï-Oriental are among the richest regions in the country, with a mean daily budget (well) above 500 CF. On the other side of the spectrum, people in rural areas of Equateur and Bandundu seem to be among the most deprived in the DRC, having only slightly more than 150 CF to spend each day.

Of course, prices are not unique throughout the country as market integration is generally very poor due to high transportation and transaction costs of different kinds. For example, food prices in Kinshasa are, respectively, 1.5 and 3 times higher than in Matadi and the villages around this main port, which is quite telling given that this inter-city connection is probably the most economically integrated area in the country. Hence, one should at least try to account for differences in regional prices in order to approach people's real consumption levels. However, prices of non-food goods could not reliably be derived from the 1-2-3 Survey, which would render overall price indices biased if only based on food items. On the other hand, this bias is less problematic for countries like the DRC, where more than 65 percent of people's budget is spent on food. Though keeping in mind this potential bias, an examination of the regional welfare profile produced by applying the GEKS-Fisher index (as explained above) reveals that (food) prices are (i) consistently higher in the capital city compared to any other urban sector, and (ii) also higher in the urban compared to the rural sector in general. Whereas the latter observation is largely self-evident, the former is much less so. Furthermore, prices in Kinshasa seem to be so much higher that the relative welfare ranking of the urban sector completely shifts; indeed, after application of this method, the inhabitants of Kinshasa are now among the Congolese with the lowest purchasing power (at least for food). On the contrary, one can also notice that food is relatively cheap in urban centers of North Kivu and Maniema, generating a mean purchasing power of, respectively, 1359 CF and 1202 CF. Returning to the urban–rural divide, the difference in welfare is much less pronounced when we correct for variation in food prices: indeed, instead of being twice as high, the welfare level of urban dwellers seems to be barely 6 percent higher on average compared to the welfare level of their rural compatriots (i.e., 784 CF vs. 737 CF).

Obviously, a correction for regional diversity solely based on a food price index is not sufficient in order to arrive at a poverty profile that is both consistent and specific. Indeed, one should also account for differences in non-food prices between regions, notwithstanding the high food share typically observed in most developing countries. Furthermore, if one is primarily concerned with poverty, corrections to improve comparability should be informed by poor people's contexts, rather than by the circumstances experienced by an *average* citizen in the country, as is implicitly the case with a general price index. And finally, besides prices, needs may also turn out to be heterogeneous throughout a country, which calls for a more specific correction. All these elements are in one way or another contained in the method that applies deflators based on a set of 56 regional FEI

poverty lines. However, as rightly criticized by several authors (Ravallion and Bidani, 1994; Ravallion and Sen, 1996; Wodon, 1997), the FEI method suffers from a number of shortcomings that may seriously affect the consistency of a poverty profile. That this also applies to the DRC in practice is illustrated by the regional welfare profile that results from this method. Indeed, when we apply the standard FEI method to the budget data of the 1-2-3 Survey, one can notice that people in the rural sector are now substantially better off than urban dwellers (i.e., 877 CF vs. 745 CF), which not only sounds counterintuitive but also goes against the general expectations of most internal and external observers.

Social needs may well be much cheaper in rural settings, but it would be surprising and indicative of the allegedly inconsistent character of the FEI method, if this aspect alone would make the rural sector 18 percent *richer* than the urban sector, especially because non-food prices in general are also relatively cheaper in Congolese cities. Moreover, the pure FEI method (FEI_1) does not take into account diet diversity or the fact that urban jobs typically require fewer calories—two other elements that could work in favor of the urban sector. Of course, all of these considerations are equally at play, but in varying degrees, *within* the urban and rural sectors, which may shift welfare rankings accordingly. Thus, in an attempt to capture all these particularities while avoiding some methodological pitfalls, a more refined methodology has been worked out in this paper.

As can be observed from the last two columns of Table 2, the regional welfare profile that results from our proposal seems to restore common knowledge about the relative welfare rankings of urban and rural settings: except for the provinces of Bas-Congo and Orientale, each time people in the urban sector are better off than their rural counterparts. In average terms, this sector difference now yields to 10 percent, being a mean difference in daily budget of around 59 CF. Within the urban sector one can largely identify two types of cities: one where people have on average a mean daily budget less than 561 CF, and another where they have more than 737 CF at their disposal. On the contrary, most rural dwellers have a mean consumption level exactly in-between these two thresholds. In both sectors Katanga and South Kivu are, respectively, the richest and poorest provinces in terms of consumption, which can be traced back to the industrial heritage of mining infrastructure on the one hand and to the conflict-prone eastern region on the other. Remarkably though, Kinshasa remains among the poorest urban centers in the DRC with an average daily budget of only 561 CF, which is partly due to the high social needs experienced by the residents of the capital. A similar argument can be made about the urban areas in the neighboring provinces of Bandundu and Bas-Congo. On the other side of the welfare spectrum, one can notice that besides the urban areas in Katanga, in addition those of Maniema and North Kivu are relatively well off, with a mean daily budget of 812 CF and 811 CF, respectively. Without attempting to provide a conclusive confirmation on the basis of the 1-2-3 Survey, it has been claimed that one of the many particular dimensions of the Great African War exactly entails the considerable commercial opportunities offered, at least for some external and internal networks (Reyntjens, 2009, pp. 224–31). As a result, it may come as no surprise that some particular areas in the east of the country may fare relatively better than others, in spite of sharing a similar dramatic history.

To end this section, let us turn to the slightly improved versions of the FEI method in order to better grasp which of our method's properties may have driven this latter change in welfare profile. As could be expected, the use of different calorie thresholds (FEI_2) resulted in an increase (decrease) of measured welfare in the urban (rural) sector, thus reducing the overall sector difference to 7 percent while leaving welfare rankings within sectors largely unchanged. The same applies when protein information is introduced (FEI_3), but this time relative rankings between provinces did not remain unaffected. Indeed, people in urban centers not only seem to eat more (or cheaper) proteins for the same amount of calories than their rural counterparts, but some cities (like South Kivu, Katanga, Kasaï-Oriental, and Kinshasa) also outperform others in this respect. As a result of introducing protein data, the welfare status of the urban sector compared to the rural sector improved once again, as on average the former is now doing slightly better than the latter (i.e., 739 CF vs. 696 CF). And finally, when non-food allowances were separately added according to the method proposed in this paper, this welfare dominance became slightly more pronounced in favor of the urban sector in general and Kinshasa in particular. This latter observation points to the fact that our pursuit for austerity indeed had an impact, though a moderate one, in reducing the range of trade-offs induced by differences in relative prices between food and non-food goods.

5. Conclusion

This paper presented a methodology to increase welfare comparability over highly diverse regions by constructing deflators based on a set of spatial poverty lines. In order to make this exercise meaningful, these poverty lines should ideally adhere to the principles of consistency and specificity. Whereas theory provides the necessary framework, practical problems often make it difficult to reconcile both principles at the same time. Therefore, the core part of this paper discussed this practical tension and proposed a method able to take standard practice a few steps further in empirically reconciling the criteria of specificity and consistency.

After a discussion of the two generic poverty line methods and their major points of attention, an alternative methodology was developed. The most distinctive features of this methodology relate to the theoretical and technical accommodation of expensive tastes and relative prices—two major problems which may jeopardize the consistency principle. Theoretically, and by considering the ubiquity and stickiness of social norms, one can rightly question the practical relevance of true expensive tastes given their obviously negative impact on welfare. In other words, since there is no incentive to develop expensive tastes, observing more "luxurious" poverty bundles in one community compared to another may often simply be taken as a reflection of different social inclusion needs (which in turn may require poverty interventions of a different kind). Yet, for the few idiosyncratic cases where true expensive tastes might still occur, a more technical handling of the matter will probably suffice to rule out, or, at least, reduce its most negative effects. This handling not only involves the delimitation of contextually more homogenous strata while ignoring potentially erratic consumption behavior; the bias of expensive tastes is further reduced by opting for more austere poverty lines.

This pursuit for austerity is also more generally important to counter the problem provoked by a difference in relative prices between strata. Indeed, at very poor levels people not only will be less likely to pursue expensive tastes, but trade-offs enabled by these price differences will also be highly reduced in size together with the level of inconsistency they might generate.

More specifically, the methodology proposed in this paper is characterized by: (i) the subdivision in several socio-economic strata and the omission of the lowest and highest welfare decile in each; (ii) the use of a differential calorie threshold for urban and rural settings; (iii) the use of information on protein intake; (iv) the inclusion of a cost of minimal housing quality based on social and topographical information; and (v) by adding an austere non-food allowance to the food–rent poverty line. Alongside each of these improvements, some caveats and shortcomings were formulated, which in turn reflect areas for further research.

The impact of this method has also been illustrated by comparing welfare rankings under three alternative methods using a household budget survey of the DRC. The first method assumed prices and needs to be homogenous throughout the country. As a result, urban centers were far better off than rural areas given the higher prices typically observed in the cities. When we used a food price index, based on the GEKS-Fisher procedure, to calculate a regional deflator, welfare rankings of cities (and especially that of Kinshasa) dropped significantly compared to those of the rural sector. Though consistent in terms of purchasing power for food, this method mainly errs on the side of specificity, especially given the profound diversity in living conditions experienced throughout the DRC. The third alternative was to calculate a deflator based on the FEI method. As could be expected from similar exercises in other countries, the resulting welfare rankings could in turn be accused of inconsistency, as reflected among others in a rural sector that would be largely *better off* than the urban sector—an observation that goes against general intuition and local knowledge. Underlying this observation and by considering the welfare profile which would occur under slightly improved versions, the most common critiques raised against the FEI method also seem to apply to this empirical case.

Thus, the method proposed in this paper has tried to find a better balance between these considerations for specificity and consistency. Using this method, the inhabitants of Kinshasa still remain, remarkably enough, among the poorest Congolese, which is largely due to a combination of high prices and expensive social needs. Whereas people in the eastern (war) province of South Kivu perform even worse than their counterparts in the capital city, the inhabitants of Katanga, at the south-eastern border, are clearly among those faring relatively well.

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