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When do relative prices matter for measuring income inequality?

The case of food prices in Mozambique

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Abstract: Changes in the relative prices of commodities consumed in different shares across income groups are known to influence real measures of inequality. Using household budget survey and price data in Mozambique from 2002/03 and 2008/09, we show that accounting for the relative price changes driven by the food and fuel price crisis substantially increases real inequality, by about two Gini points. This result is obtained by computing a price deflator that explicitly reflects divergent price dynamics of different product categories. The difference in measured inequality is larger in regions where consumers are more dependent on imported food, particularly those in urban and southern areas of the country. Since the main factors driving this result prevail in other countries, the approach points to the likelihood of widespread underestimation of inequality as a result of the secular increase in basic food prices observed since about 2000, and sharp increases experienced during the 2007–09 food and fuel price crisis.

Keywords: relative price changes, price index, income inequality, Mozambique
JEL classification: E31, D12, D31, O55

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1 Introduction

> [I]f the prices of 'luxuries' and 'necessities' move differently, then different groups are differently affected … (Muellbauer 1974: 32).

As Muellbauer (1974) highlights, the above observation is far from new. Nonetheless, it continues to be under-explored. Existing research on economic inequality usually pays little attention to relative prices changes. At most, aggregate geographical price indexes are employed to deflate nominal income, thus implicitly assuming all agents in each region consume the same basket of goods on average.[1] This assumption is not innocuous. In both advanced and developing countries, rich and poor households live in similar locations yet consume different baskets of goods. Where the prices of goods in their respective baskets follow very different dynamics, application of a single aggregate price index to deflate nominal incomes can give a misleading view of real income inequalities.[2]

In this paper, we explicitly consider the impact of differential price dynamics on real income inequality. Rather than applying a single price deflator across the income distribution, we construct an alternative deflator that is sensitive to differences in household expenditure on different goods. This new deflator can be constructed at an arbitrary level of specificity. However, for clarity we focus on price trends in three broad product categories: (i) basic or 'core' food, (ii) 'non-core' food, and (iii) other goods (non-food expenses). We apply this method to the case of Mozambique over a period of substantial changes in relative prices. Our alternative deflator indicates large differences between nominal and real income inequality when an expenditure-sensitive deflator is applied. In particular, real income inequality in Mozambique is shown to be substantially higher, as measured by the Gini coefficient, as a result of the shift to a generally upward trend in basic commodity prices occurring around 2000, which was strongly expressed in the food and fuel price crisis of 2007–09. This result is particularly pronounced in areas where consumers are especially dependent on imported food. As many developing countries share the drivers of this result, it is possible that the inequality implications of the rise in the relative price of basic goods in general and the food and fuel price crisis of 2007–09 in particular have been underestimated in other countries.[3]

The remainder of this paper is structured as follows. In Section 2, we briefly present the motivation for our research. In Section 3, we describe the general methodology used to construct alternative price indexes. This represents an enhancement on the small existing literature (e.g. Günther and Grimm 2007) since our approach does not depend on the ex ante ranking of households by nominal income. We apply our approach to the case of Mozambique in Section 4, and discuss price dynamics over the 2007–09 food and fuel price crisis, the data used, and the specific derivation of the price indexes. In Section 5, our results concerning real inequality for Mozambique are presented, including an analysis at the sub-national level. Section 6 concludes, noting that

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[1] Notable examples of the empirical literature on the importance of relative price changes on different population groups include Amble and Stewart (1994), Cage et al. (2002), Garner et al. (1996), Hagemann (1982), and Muellbauer (1974).

[2] In the remainder of this paper, we distinguish between nominal and real income inequality. We define real income inequality as the one derived from a consumption measure deflated by a deflator that is sensitive to differences in household expenditure on different goods.

[3] For example, Oosthuizen (2013) has found evidence for inequality increases in South Africa caused by relative price shifts.

greater attention to relative price shifts across the income distribution is merited when studying inequality.

2 Motivation

To obtain real measures of income or expenditure, nominal expenditures are usually deflated using a national or region-specific consumer price index (CPI). Since measures of income inequality are (typically) scale invariant, it follows that there should be no difference between nominal and real measures of income inequality where a single aggregate CPI is used to deflate nominal observations.

However, there are established drawbacks of relying on a highly aggregate price index for the purposes of measuring welfare. Engel's Law points towards differential patterns of consumption along the income distribution. For this reason, consumption baskets used to measure absolute poverty ideally reflect consumption patterns of the poor (Deaton 1998; Ravallion and Bidani 1994). That is, under the costs of basic needs approach, failure to account for the specific consumption patterns of the poor can lead to erroneous conclusions about poverty levels and trends (Günther and Grimm 2007; Tarp et al. 2002). Recent work goes further by suggesting a particular approach to adequately account for differential consumption patterns of the poor across space and through time (Arndt and Simler 2010).

Muellbauer (1974) highlighted that relative prices often vary along the distribution of income (consumption). Even within relatively small geographical areas, households frequently consume substantially different types of goods in different proportions (on a per capita basis). Consequently, neither use of a national/regional price deflator nor a focus on consumption patterns of a specific group (e.g. the poor) is likely to reflect relative price differences across the entire distribution of income. As a result, application of such price deflators can be misleading in cases where developments in real income inequality are being analysed.

To fix ideas, the remainder of this section provides an analytical example of how an income-specific relative price index (i.e. differences in costs of living along income distribution) can drive a wedge between nominal and real income inequality. To do so, presume that the cost of living (average price index) faced by each household is a function of its level of income (consumption), as follows

$$p_j(y_j) = \left[1 - \alpha\left(\bar{y}/y_j - 1\right)\right]^{-1} = \frac{y_j}{y_j + \alpha(y_j - \bar{y})}, \quad (1)$$

where *j* is the household and *y* its income. This says that for positive values of α, observations of *y* lying above (below) the mean correspond to a price index less than (greater than) 1. In cases where food prices are consistently higher (or rising faster) than prices of all other goods, we expect $\alpha > 0$ by Engel's Law.

This particular specification of the price index is useful on two counts. First, it provides a simple expression for real income ($\tilde{y}$) as a function of nominal income and the income-gradient of the cost of living (α)—that is, omitting household subscripts we have: $\tilde{y} = y / p = y + \alpha(y - \tilde{y})$. Continuing to assume $\alpha > 0$, it follows that: $\tilde{y} > y$ if $y > \bar{y}$ and vice versa, implying that positive values of α induce greater dispersion in real versus nominal income. Second, our price index provides a natural interpretation to α. Noting that

$$\mathrm{E}(\tilde{y}) = \mathrm{E}(y), \mathrm{Var}(\tilde{y}) = (1+\alpha)^2 \mathrm{Var}(y), \tag{2}$$

we can interpret α as the percentage point difference in the coefficient of variation of real versus nominal income.

Focussing on the question at hand, a closed-form expression for the effect of alternative values of α on real income inequality can be derived for the Gini coefficient. As shown, for example, by Wan (2004), the Gini coefficient can be calculated from estimates of a linear regression of the income measure on the associated household income ranks (denoted i). That is, nominal income inequality is given by

$$\mathrm{Gini}(y) = \frac{n^2-1}{6n} \frac{\mathrm{E}[\tilde{\imath}(y-\bar{y})]}{\mathrm{E}(\tilde{\imath}^2)\mathrm{E}(y)} = \frac{n^2-1}{6n} \frac{\hat{\beta}_y}{\bar{y}}, \tag{3}$$

where $\hat{\beta}_y$ is taken from estimates of the linear regression model $y = \lambda + \beta i + \varepsilon$; and $\tilde{\imath} = i - \bar{\imath}$. To derive an expression for the partial derivative of the real income Gini to α, note that by virtue of our particular specification of the price index, the rank ordering of agents is independent of the choice of α. In fact, comparing the corresponding expression for Gini $(\tilde{y})$ to Equation (3), the only element that differs is the numerator of the estimate for $\hat{\beta}_{\tilde{y}}$ (here, calculated using real income as the dependent variable). Examining this term, we have

$$\hat{\beta}_{\tilde{y}} = \frac{\mathrm{E}[\tilde{\imath}(\tilde{y}\text{-}\bar{\tilde{y}})]}{\mathrm{E}(\tilde{\imath}^2)} = \frac{\mathrm{E}[\tilde{\imath}(1+\alpha)(y-\bar{y})]}{\mathrm{E}(\tilde{\imath}^2)}$$

$$= \frac{(1+\alpha)\mathrm{E}[\tilde{\imath}(y-\bar{y})]}{\mathrm{E}(\tilde{\imath}^2)} = (1+\alpha)\hat{\beta}_y. \tag{4}$$

It follows that the partial derivative of real income inequality with respect to α simply is

$$\delta\,\mathrm{Gini}(\tilde{y}) \Big/ \delta\alpha = \frac{n^2-1}{6n} \frac{\hat{\beta}_y}{\bar{y}} = \mathrm{Gini}(y). \tag{5}$$

This says that if the application of our income-specific price deflator generates a 10 per cent increase in the coefficient of variation in real income relative to that of nominal income (which corresponds to setting α=0.1), the corresponding Gini coefficient also will rise by 10 per cent. So, in this very stylized case, the sensitivity of inequality to changes in the price gradient is a function of initial income inequality and (trivially) the slope of the income gradient of the cost of living.

It merits comment that this result is a direct corollary of Milanovic's (1997) observation that the Gini coefficient is a product of three elements: (i) the coefficient of variation, (ii) the correlation between income and its ranks, and (iii) a constant. In this example, only the first of these terms varies with changes in our price index; thus, we find a one-to-one relationship between changes in α and changes in the real income Gini coefficient.

3 Methodology

Following the above discussion, a price deflator is required that reflects relative price effects along the income distribution in a given location. An approach used in previous studies has been to compute a (national) CPI for each percentile of the nominal income distribution (e.g. see Günther

and Grimm 2007). One of the drawbacks of this method is that, in contrast to the stylized example in Section 2, ranking households according to their nominal incomes may not correspond to their ranking by real income, where the latter is calculated using the 'true' cost of living for each household as a deflator. A priori, it is not unreasonable to expect that households with the *same* nominal per capita income may have very different expenditure shares over alternative goods, meaning that their effective cost of living differs.

To account for this, we derive a consumption deflator based on the observed (chosen) expenditure structure of households. This avoids the problem of relying on the overall value of nominal consumption to construct the price index and directly allows for different relative price movements across categories of expenditure. At the most generic level, therefore, a household-specific price index (HPI) can be defined as

$$h_j = \sum_{k \in K} \frac{y_{jk} p_k}{\sum_{k' \in K} y_{jk'}} = \sum_{k \in K} \frac{y_{jk} p_k}{y_j}, \qquad (6)$$

where k is a member of the set of all goods available in the economy (K), and p_k is the observed price index of good k (which takes a value of one in the base year for all goods). This means that y_{jk}/y_j gives the expenditure share of household j on good k. In this sense, h_j is just the microeconomic counterpart to an aggregate price index calculated from aggregate expenditure shares.

Theoretically, there is no reason why the vector h_j cannot be used to calculate moments of the 'true' real income distribution. In practical terms, however, it is not likely to be possible to implement Equation (6) at the product-specific level. Household budget survey information is never perfect and effective prices cannot be estimated with confidence for all goods in the economy—that is, there are many goods with few or no price observations. For this reason, it is useful to approximate Equation (6) by considering shares of expenditure on broader product categories. This is the route adopted in an application to the case of Mozambique, to which we now turn.

4 Application to the case of Mozambique

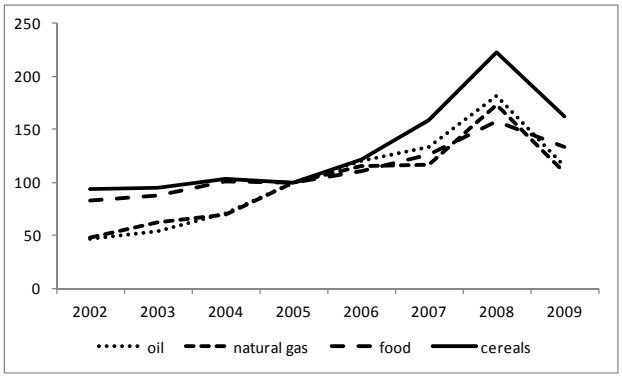
4.1 Background

Over the period 2007–09, the price of staple foods and fuel in international markets (Figure 1) increased dramatically in comparison to other consumption goods. These price increases were quickly passed through to domestic markets in many developing and developed countries (Arndt et al. 2008; Dillon and Barrett 2013). The case of Mozambique is of interest because the price upsurge of 2007–09 was captured in a detailed budget survey that was in the field from September 2008 to August 2009.

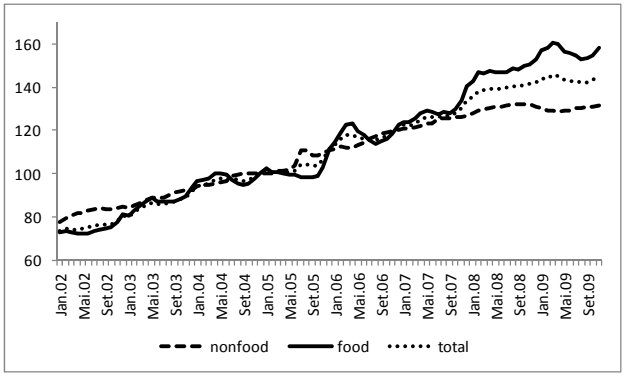
Using official price data from the capital city of Maputo, Figure 1 illustrates trends in food and non-food items in Mozambique over time. The two trends diverge substantially from the 1999–2006 trend. This almost certainly reflects the effect of the international food price upsurge on food products in Mozambique. It is notable that from the end of 2006 the price index for non-food products is lower than the overall CPI and substantially lower than the food price index.

Figure 1: Indexes for (a) real price change for oil, natural gas, food, and cereals globally and (b) consumer price for food and non-food products in Maputo (2002–09)

(a)



(b)



Note: (a) World index, 2004–05=100. (b) Maputo's index, December 2004=100.

Source: IMF (2013) and authors' calculations based on data from the National Institute of Statistics.

Importantly, Mozambique is a net importer of staple foods such as wheat and rice. These items constitute significant budget shares of lower income households, particularly in urban areas. Indeed, as documented by Hanlon (2009), food and fuel price rises during 2007–09 lay behind outbursts of social unrest in urban areas in this period. In light of the discussion in previous sections, Mozambique provides a likely test case for the hypothesis that nominal and real income inequality may differ sharply when their differential relative price trends are captured. Moreover, as in other Sub-Saharan African countries, the degree of inequality in the country is already quite high, and observed consumption patterns differ markedly between the rich and the poor.

4.2 Data

The primary data used in this study is a series of microeconomic household budget surveys. Specifically, we use the Inquérito aos Agregados Familiares 2002/03 (IAF02, Household Budget Survey 2002/03) and the Inquérito aos Agregados Familiares sobre Orçamento Familiar 2008/09 (IOF08, Household Budget Survey 2008/09). These surveys include information on the general characteristics of the individuals and households, as well as information on daily consumption, monthly consumption, own consumption, possession of durable goods, transfers, and gifts. The surveys have been used to estimate nominal and per capita consumption per household. Also, as described by the Ministry of Planning and Development's National Directorate for Studies and Policy Analysis (MPD/DNEAP 2010), poverty lines, food poverty lines, and poverty line ratios have been estimated from these surveys in a consistent fashion.

Details and supplementary information for the IAF02 can be found in the report collaboratively compiled by the Ministry of Planning and Finance (MPF 2004), and those for the IOF08 can be found in the reports of the National Institute of Statistics (INE 2010) and MPD/DNEAP (2010). It is important to point out that Mozambique is a large country with relatively weak road infrastructure and low (rural) population density. As a result, price analysis on the budget survey data is undertaken separately for 13 geographical regions. These constitute spatial domains that often correspond to distinct agro-ecological conditions and, therefore, large differences in the supply/demand of different food items.

In addition to the survey data, we use product-specific monthly price data over the period 2003–09 collected in three urban areas of the country (Nampula, Beira, and Maputo). This is the base data used to build the official national and regional CPIs but also can be used to construct bespoke price indexes such as for specific product groups (see Sections 4.3 and 4.4). Both the budget surveys and the price index series are collected by the INE (2010).

4.3 Household-specific price indexes

In order to construct category- and household-specific price indexes for Mozambique, we combine the detailed product-specific CPI data with household expenditure data from the IAF02 and IOF08 surveys. This combination is necessary because the budget surveys provide detailed data on prices for a relatively limited range of (core) food products. These are sufficient to develop (and price) a cost of basic needs poverty line; however, they do not adequately capture the full range of prices for other goods.

Thus, we proceed in three steps. First, we divide household total nominal expenditure into three categories: (i) basic or 'core' foods, (ii) 'non-core' foods, and (iii) non-food or all other items. Food items are distinguished between core and non-core categories according to their respective share of total expenditures. Specifically, in each spatial domain we sort food products by their share of total expenditures; foods that appear below a cumulative cut-off of 75 per cent of total food expenditure are excluded from the preliminary list in each domain. In turn, core foods are all those food items that appear on the lists of at least three spatial domains.[4]

Second, a price index is allocated to each product category in each spatial domain. For core foods, we use the ratio of food poverty lines calculated from the IAF08 and IOF02 survey periods, respectively. This effectively represents the core food inflation that occurred between the two periods, taking 2002/03 as the base period. For the two remaining categories, we create bespoke indexes from the CPI data that correspond to other foods (i.e. all foods excluding core food items) and to all other items. As CPI data is available in three locations, individual households are allocated to their *nearest* available CPI data point.

Third, an HPI is calculated as the sum of the product of each category-specific price index and the observed share of household expenditure. The resulting HPI is a weighted average of the three category-specific price indexes, which is just a simplified version of Equation (6). Specifically, for households in a given location we have

$$\mathrm{HPI}_j = s_{\mathrm{j,core}} \times p_{\mathrm{core}} + s_{\mathrm{j,non\text{-}core}} \times p_{\mathrm{non\text{-}core}} + s_{\mathrm{j,other}} \times p_{\mathrm{other}}, \qquad (7)$$

[4] The list of core food products includes: mackerel, poultry, maize flour, white maize, beef, brown sugar, butter bean, dried fish, sawfish, cacana leaves, cowpea, wheat bread, groundnut, coco, squash leaves, tomato, rice, cassava flour, fresh cassava, and sunflower oil.

where $s_{j,k}$ represents the share of expenditure of household *j* on items in category *k*.

4.4 Results for price indexes

Table 1 compares price indexes calculated under different assumptions for each region/spatial domain. The table confirms that prices of different product categories have followed different dynamics over time. In particular, the price index for core food is always higher than the price index for non-food, in all spatial domains. This corresponds to the illustration in Figure 1, where we see that prices of core food products increased more rapidly than that of non-core foods and non-food items in particular.

In the last column of Table 1, we present poverty line ratios (PLRs) calculated from the IAF08 and IOF02 survey periods. This represents an alternative measure of inflation between the two periods, taking 2002/03 as the base period.

Table 1: Category-specific price index, official consumer price index, and poverty line ratio by region/spatial domain, index ratio 2008/09 to 2002/03

	Category-specific price index			CPI	PLR
	Core food	Non-core food	Non-food	All products	All products
National	234.1	191.9	151.2	176.0	231.8
North	238.5	212.3	150.5	190.1	232.0
Centre	258.8	187.5	154.7	171.3	258.3
South	183.4	171.6	145.7	165.0	183.8

Note: Both the category-specific price index and the CPI are differentiated by region (North, Centre, South). The category-specific price index uses the ratio between the 2008/09 and the 2002/03 food poverty lines as the price index for core food. The PLR is the ratio between the 2008/09 and the 2002/03 poverty lines. The values at regional level are obtained as population-weighted averages.

Source: Authors' calculations.

Table 2 reports data on aggregate expenditure shares by consumption quintile. As expected, we observe that poorer households devote a larger share of total consumption to food products, especially core food products.[5] Together with evidence on category-specific price dynamics (Table 1), this confirms that the average cost of living has an income gradient. This gradient is illustrated in Figure 2, which shows that substantial differences in consumption patterns, and hence trends in HPIs, begin to manifest themselves strongly in the upper quintile of the consumption distribution.

Table 2: Percentage expenditure shares by product category and poverty status

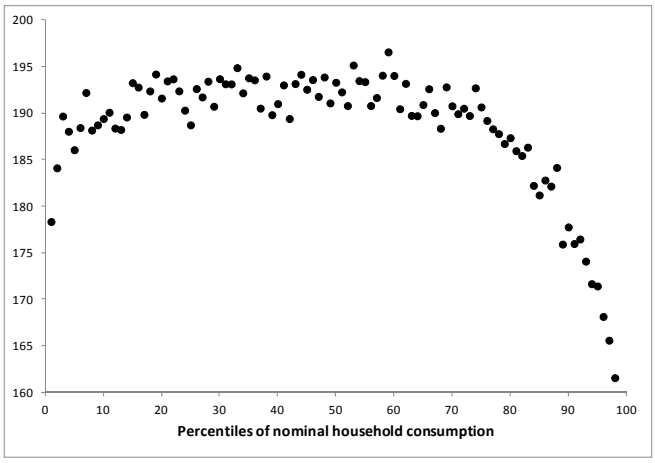
Expenditure quintile	Core food	Non-core food	Non-food
1	44.5	15.5	41.1
2	50.7	14.8	34.8
3	51.2	14.9	34.1
4	51.0	15.1	34.1
5	40.6	12.4	47.2

Note: Relatively high non-food expenditure shares for the bottom quintile reflect imputed consumption related to housing. The hedonic method used in MPD/DNEAP (2010) report ascribes a use value to housing, thus causing all households, including very poor households, to have some level of consumption in this (non-food) category.

Source: Authors' calculations.

[5] In Mozambique, almost 55 per cent of the population was classified as consumption poor in 2008/09 (MPD/DNEAP 2010).

Figure 2: Percentile-specific price indexes by percentiles of nominal household consumption



Note: Results were obtained computing the median of household-specific price indexes for each percentile. The 1st and 100th percentiles are excluded from the figure.

Source: Authors' calculations.

4.5 Inequality results

As a final stage of analysis, we use each of our three candidate price indexes (i.e. CPI, PLR, and HPI) to calculate a corresponding real income (consumption) series, from which alternative income inequality measures can be estimated. Table 3a shows Gini coefficients without any attempt to correct for spatial variation in prices, reporting inequality estimates from the base year (2002/03). To adjust for spatial differences in prices (which are large), we also deflate base-year nominal incomes by the spatial price index derived from the IAF02 survey. Thus, for household *j* in spatial domain *l*, we have spatially adjusted nominal consumption: $\tilde{y}_{jl,2003} = y_{jl,2003}/sp_{l,2003}$, where $sp_{l,2003}$ is the 2002/03 spatial price index corresponding to domain *l*. Since 2002/03 is the base year, the spatially adjusted nominal income is equivalent to real income in the base year. In turn, for meaningful comparison, real incomes in 2008/09 are calculated as: $\tilde{y}_{jl,2008} = y_{jl,2008}/(p_{j,2008} \times sp_{l,2008})$, where $p_{j,2008}$ is the chosen price index for household *j* in 2008/09 and $sp_{l,2008}$ is the spatial price index corresponding to domain *l*.[6]

Table 3b shows Gini coefficients computed using spatially adjusted income. Regardless of the adjustment, real income inequality for 2008/09 is greater when measured using the PLR instead of the CPI, and even greater when the HPI is used as our deflator of nominal consumption. In particular, the Gini index is about two percentage points higher at the national level, which represents a significant difference.

[6] Note that we find essentially the same analytical results by holding the spatial price deflator constant at 2002/03 or 2008/09 values in all price index calculations. Results available on request.

Table 3: Gini index calculated using (a) non-spatially and (b) spatially adjusted real capita consumption for 2002/03 and 2008/09

(a)

	R02 (2002/03)		RCPI (2008/09)		RPLR (2008/09)		RHPI (2008/09)	
	Gini	SE	Gini	SE	Gini	SE	Gini	SE
National	0.470	0.0072	0.457	0.0063	0.460	0.0063	0.482	0.0068
Urban	0.521	0.0108	0.507	0.0089	0.510	0.0089	0.533	0.0091
Rural	0.362	0.0070	0.377	0.0070	0.377	0.0071	0.385	0.0081

(b)

	R02 (2002/03)		RCPI (2008/09)		RPLR (2008/09)		RHPI (2008/09)	
	Gini	SE	Gini	SE	Gini	SE	Gini	SE
National	0.415	0.0069	0.414	0.0068	0.416	0.0068	0.434	0.0075
Urban	0.483	0.0122	0.482	0.0114	0.484	0.0112	0.506	0.0117
Rural	0.369	0.0072	0.366	0.0073	0.367	0.0074	0.375	0.0084

Note: R02, real per capita consumption for 2002/03; RCPI, real per capita consumption for 2008/09, with consumer price index (CPI) as deflator; RPLR, real per capita consumption for 2008/09, with poverty line ratio (PLR) as deflator; RHPI, real per capita consumption for 2008/09, with household-specific price index (HPI) as deflator.

Source: Authors' calculations.

Our results are not sensitive to the measure of inequality employed. Table 4a shows the Theil index obtained from (spatially adjusted) real incomes for 2002/03 and 2008/09, whereas Table 4b presents the percentile ratio p10/p90. Regardless of the chosen measure, real income inequality for 2008/09 seems to be greater when the HPI is used as the deflator of nominal consumption.[7]

Table 4: Inequality measures—(a) Theil index and (b) percentile ratio calculated using spatially adjusted real per capita consumption for 2002/03 and 2008/09

(a)

	R02 (2002/03)		RCPI (2008/09)		RPLR (2008/09)		RHPI (2008/09)	
	Theil	SE	Theil	SE	Theil	SE	Theil	SE
National	0.363	0.0201	0.364	0.0197	0.370	0.0199	0.417	0.0239
Urban	0.508	0.0392	0.502	0.0328	0.507	0.0320	0.561	0.0363
Rural	0.262	0.0172	0.259	0.0210	0.261	0.0218	0.283	0.0273

(b)

	R02 (2002/03)		RCPI (2008/09)		RPLR (2008/09)		RHPI (2008/09)	
	p10/p90	SE	p10/p90	SE	p10/p90	SE	p10/p90	SE
National	0.174	0.0052	0.183	0.0042	0.183	0.0043	0.177	0.0040
Urban	0.142	0.0084	0.143	0.0056	0.141	0.0054	0.132	0.0050
Rural	0.193	0.0065	0.197	0.0056	0.199	0.0056	0.198	0.0058

Note: R02, real per capita consumption for 2002/03; RCPI, real per capita consumption for 2008/09, with CPI as deflator; RPLR, real per capita consumption for 2008/09, with PLR as deflator; RHPI, real per capita consumption for 2008/09, with HPI as deflator.

Source: Authors' calculations.

As expected, the difference is larger in urban areas, where consumers are most dependent on imported food and cannot rely on home production. Furthermore, at the national and urban levels,

[7] Results are robust to removal of extreme consumption values (1st and 100th percentile).

the Gini index computed with HPI as deflator is statistically different both from the 2002/03 baseline and from the index computed with either CPI or PLR as deflators.[8] This reinforces the argument that considering the expenditure structure of different income groups makes a significant difference to the assessment of real inequality.

5 Conclusions

In this paper, we analysed how relative price changes of commodities, consumed in different amounts by the rich and the poor, influence income inequality. These relative price differences were particularly evident during the 2007–09 food and fuel price crisis. Income groups relying more on basic food in food-importing countries were especially hit by the food price upsurge. Relative prices moved such that richer households consuming less basic food as a share of total expenditure became better off in relative terms.

Using household budget survey and price data in Mozambique from 2002/03 and 2008/09, we compared several inequality indexes based on three alternative real consumption measures. These were obtained using as the following deflators: (i) the official CPI; (ii) the ratio of absolute poverty lines from the two survey rounds; and (iii) a composite HPI based on category-specific price indexes for core food, non-core food, and non-food goods. We found that real inequality was substantially higher—by about two Gini points—when computed using the composite HPI. The difference for urban areas, where consumers are most dependent on imported food and cannot rely on self-consumption, was bigger than for rural areas.

There is little reason to believe that Mozambique is a special case; hence, our proposed methodology has more general applications. Real inequality has likely been underestimated in many other food-importing countries during the 2007–09 food and fuel price crisis. In sum, greater attention to relative price movements at national and sub-nationals levels is merited in the evaluation of real inequality trends.

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[8] The difference is statistically significant when either the Gini coefficient or the Theil index is used. To study the statistical significance of the computed indexes, we used the STATA commands 'digini' and 'dientropy' contained in the DASP package (Abdelkrim and Duclos 2007).

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