Data Diagnostics for the Mozambique Household Budget Survey (*Inquérito Sobre Orçamento Familiar)* 2014/15

18th April 2017

Contents

1. Introduction

Purpose of this note is analyzing the quality of the latest Mozambique's Household Budget Survey, as a preliminary step to the update of the Poverty and Shared Prosperity profile for the country. In the following, we provide a general description of the survey, and we concentrate on the main expenditure items entering the definition of the consumption aggregate, namely, food (both expenditure and self-consumption), durables and housing. Unless otherwise specified, all results reported in this note refer to unweighted observations.

2. General Description of the Survey

2.1. Purpose and Design

The Mozambique Household Budget Survey 2014/15 (*Inquérito Sobre Orçamento Familiar* – referred to in the following as IOF 2014/15), has been carried on by the National Statistics Institute at national level and financed by the Government of Mozambique. The World Bank provided technical assistance on sampling, questionnaire design and CAPI implementation. However, the National Statistics Office decided to collect food consumption data manually. As this was the first time CAPI was employed in a household budget survey staff at the NSO did not trust consumption data would be collected without any flows. The NSO started by collecting consumption data using both CAPI and pen and paper, but later on ended up collecting the data manually only. The field operation spanned over a period of a year, between August 2014 and July 2015. The main objective of IOF 2014/15 is to measure household incomes and expenditures and other socio-economic characteristics in order to obtain various indicators of household living conditions in Mozambique, in particular, among other purposes, the survey is meant to be the source of data for assessing the progress of the national Action Plan for the Reduction of Poverty (*Plano de Acção para a Redução da Pobreza*, PARP) and for revising the weights in the consumer price index.

The IOF 2014/15 sampling base is the 2010 sampling frame, drawn upon the 2007 Census data and cartography, and it was intended to follow a non-rotating four by four panel system, where each household would have been interviewed 4 times during the 12 months' survey cycle, and during all four weeks in a month. In reality, due to budget shortcomings, the survey was carried on only during the I (AUG-SEP-OCT), II (NOV-DEC-JAN) and IV (MAY-JUN-JUL) quarters (from now on, Q1, Q2, Q4). The sample design is intended to be representative at (i) national, (ii) national urban and national rural, (iii) regional (South, Center and North) and (iv) provincial levels (ten provinces plus Maputo City). Table 1 below summarizes the regional and provincial subdivisions.

Table 1. Geographical survey sub-divisions

Region	Province
South	Maputo City
	Maputo Province
	Gaza
	Inhambane
Center	Manical
	Sofala
	Tete
	Zambézia
North	Nampula
	Cabo Delgado
	Niassa

2.2. Attrition

The panel structure of the survey is by design susceptible to be affected by attrition. As summarized in Table 2, Q2 has the lowest number of respondents. With respect to Q1, 13 percent of individuals (10

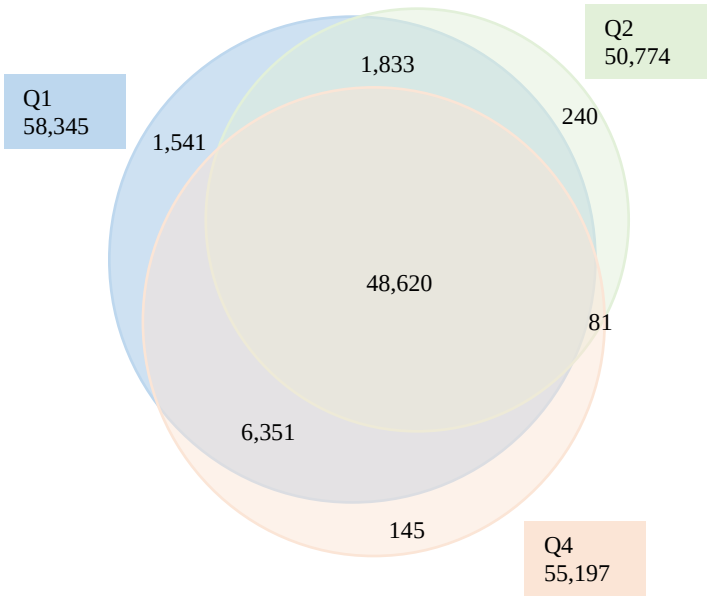
percent of households) are lost in Q2, while only 5 percent of individuals (or 2 percent of households) are lost in Q4.

Table 2. Observations per survey quarter, unweighted

	Q1	Q2	Q4
Individuals	58,345	50,774	55,197
Households	11,506	10,373	11,317

To a closer observation (see Figure 1), it appears that moving from Q1 to the next survey rounds, new individuals enter the survey.[1] With respect to Q1, 321 new individuals are surveyed in Q2 (81 of whom are again surveyed in Q4), and 145 new individuals enter the survey in Q4. Summarizing, 48,620 individuals appear in all three quarters, and 58,811 individuals have been cover at least once in the survey year. This means that Q1 covers 99 percent of all individuals ever interviewed in the survey year, while almost 20 percent of individuals are lost if the analysis is based only on the observations recurrent in all three quarters.

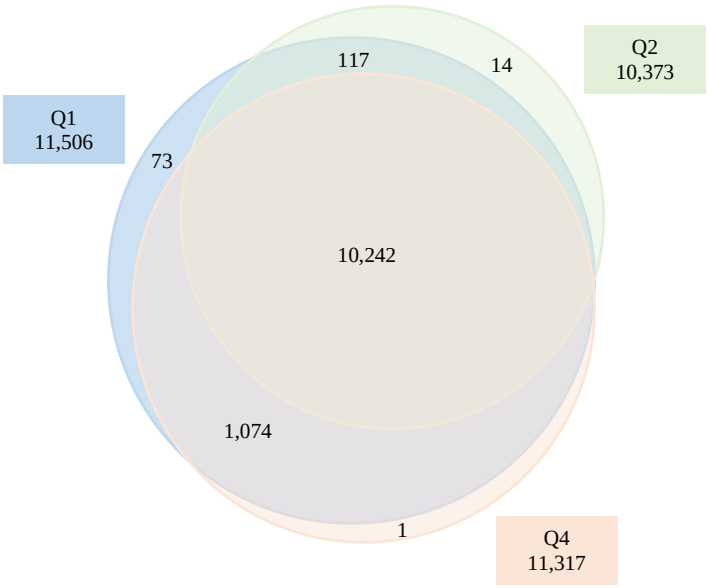
Figure 1. Observation overlapping between survey quarters, individuals



Observing the overlapping between quarters of the number of households (see Figure 2), Q2 stands out as the quarter with highest attrition: 1,074 households which were interviewed in Q1 were not interviewed again in Q2 (a loss of 9 percent of households with respect to Q1). On the other hand, in Q4, only less than 1 percent of households recorded in Q1 have been not interviewed again in Q4. Nevertheless, in Q4, 686 (nuclear) households appear in the roster without any information.

[1] Households who moved out from their dwellings between quarters were substituted by those that moved in, on the assumption that their characteristics did not differ significantly.

Figure 2. Observation overlapping between survey quarters, households



The attrition between survey rounds seems more accentuated in some provinces: in Zambezia only 63 percent of individuals appear in Q2, followed by Cabo Delgado (81 percent), Nassa (83 percent) Nampula and Maputo City (both 87 percent) and Tete (89 percent). In Q4, Zambezia still loses 16 percent of surveyed individuals, followed by Cabo Delgado where 11 percent observations are missing in Q4 (see Table *4*).

Table 3. Observations per survey quarter, by province, unweighted

	Q1	Q2	Q4
Cabo Delgado	5,038	4,188	4,502
Gaza	4,260	3,957	4,161
Inhambane	4,076	3,782	3,939
Manica	5,110	4,733	4,915
Maputo City	5,540	4,945	5,218
Maputo Province	4,938	4,624	4,790
Nampula	7,157	6,329	6,710
Nassa	4,553	3,836	4,353
Sofala	5,537	5,282	5,510
Tete	4,859	4,385	4,711
Zambezia	7,277	4,713	6,388

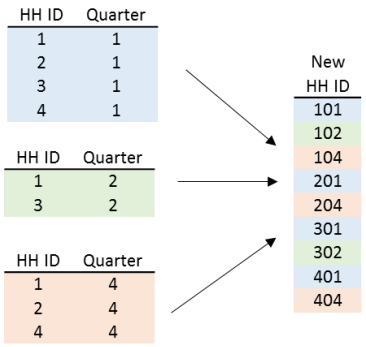
Table 4. Observations per survey quarter, by province, as a share of the number of individuals overall interviewed in each province

	Q1 ∪ Q2 ∪ Q4	Q1	Q2	Q4
Cabo Delgado	5,145	97.9	81.4	87.5
Gaza	4,319	98.6	91.6	96.3
Inhambane	4,158	98.0	91.0	94.7
Manica	5,172	98.8	91.5	95.0
Maputo City	5,673	97.7	87.2	92.0
Maputo Province	5,012	98.5	92.3	95.6
Nampula	7,273	98.4	87.0	92.3
Nassa	4,644	98.0	82.6	93.7
Sofala	5,618	98.6	94.0	98.1
Tete	4,950	98.2	88.6	95.2
Zambezia	7,532	96.6	62.6	84.8

2.3. Data structure used in official poverty estimates

As documented in the official poverty assessment (MEF, 2016), the official poverty estimates do not take into account the panel structure of the survey. In the file with the official consumption aggregate ("cons_real_ent.dta") there are 33,192 households. We were able to find a perfect match with the total number of household observations in the three quarters (minus four households, which nevertheless appear with empty information), reconstructing the household ID as it has been done in the official final file for poverty estimates (see Figure 3 for a simplified example). The information collected in the three quarters has been appended, so that the same household observed, say in two different quarters, is considered as two different observations.

Figure 3. A simplified representation of how are observations from different quarters are aggregated in the file for official poverty estimates



The alternative way to use the dataset would have been to take the average consumption of households over the three quarters, and consider a household as poor if their average consumption falls below the poverty line. As underlined in Joliffe and Serajuddin (2017), these two alternatives (treating data as cross-section or using their panel structure and averaging out consumption) may lead to very different poverty estimates. In their analysis about Jordan, for instance, the authors find that handling the data from repeat visits as new observations yields a poverty rate that is 26 percent greater than the rate reported as the official estimates which instead use the panel structure of the survey. The way Mozambique handles the data is closer to the majority of world measures poverty based on cross-sectional data that captures an estimate of income or consumption at a single point in time.

3. Population Statistics

First of all, we check whether the weighted observations in the official files used to produce the official poverty numbers add up to the total population in the country. Official population projections estimate for 2014 a total of 25,041,922 individuals and for 2015 a total of 25,727,911 individuals (INE, 2014 and 2015), which implies an overall population growth rate of 2.7 percent. Therefore, we would expect to find in the IOF 2014/15 a number of individuals in between the two projections.

According to the weights found in the MEF file "cons_real_ent.dta", which, as mentioned above, is a household-level file containing the consumption aggregate and poverty line, and which allows to replicate the official poverty estimates found in the Poverty Assessment (MEF, 2016), the population in Mozambique for the year of the survey would add up to 77,001,985, three times the expected population size.[2]

[2] popwt = hhweight * hhsize (population weight = household weight * household size) and

To a closer check, the sum of population weights in each quarter allows to reasonably replicate the projected population in Q1 and Q2, while it overestimates by about 500,000 individuals in Q4 (see Table 5). It seems that after appending the three quarters together, weights have not been recomputed.

Table 5. Observations and weighted observations, by quarter

	Observations	Weighted Observations
Q1	11,505	25,252,774
Q2	10,372	25,463,025
Q4	11,308	26,286,185
Overall	33,185	77,001,985

Official population projections by province and quarter show a large variability in projected population growth rates by province, and also over quarters (see Table 6). Annual population growth rates at province level are as high as 3 percent in Maputo Province, Tete, Niassa, and as low as 1 percent in Maputo City. Q1 even shows a negative growth rate for Manica. The per-quarter growth rate (last column in Table 6) is about the same (mainly slightly higher) than the growth rate between Q1 and Q2 (with the exception of Manica), which is what we would expect if the annual growth rate is constant over the year-period.

Table 6. Official Poverty Projections, and implicit population growth rates

	Population Projections			Population Growth Rates		
	Q1 23-Sep-14	Q2 23-Dec-14	Q4 22-Jun-15	$\frac{Q2-Q1}{Q1}100$	$\frac{Q4-Q1}{Q1}100$	$\left(\left(\frac{Q4}{Q1}\right)^{\frac{1}{3}}-1\right)100$
Niassa	1,607,861	1,623,582	1,656,906	0.98	3.05	1.01
Cabo Delgado	1,869,161	1,876,877	1,893,156	0.41	1.28	0.43
Nampula	4,913,699	4,945,376	5,008,794	0.64	1.94	0.64
Zambezia	4,709,696	4,739,456	4,802,356	0.63	1.97	0.65
Tete	2,440,984	2,465,486	2,517,444	1.00	3.13	1.03
Manica	1,904,238	1,898,230	1,956,538	(0.32)	2.75	0.91
Sofala	2,010,558	2,022,819	2,048,676	0.61	1.90	0.63
Inhambane	1,480,839	1,486,846	1,499,479	0.41	1.26	0.42
Gaza	1,397,727	1,403,878	1,416,810	0.44	1.37	0.45
Maputo Province	1,654,569	1,672,015	1,709,058	1.05	3.29	1.09
Maputo City	1,229,494	1,233,434	1,241,702	0.32	0.99	0.33
Total	25,218,826	25,368,000	25,750,927	0.59	2.11	0.70

Source: INE, Direcção de Censos e Inquéritos (from e-mail exchange with Dr. Basílio S. Cubula) for the official projections. WB staff for population growth rates

Table 7 shows the weighted observations found in the data, and the percentage difference with respect to the official population projections (Table 6). Q1 and Q2 are consistent with the official projected population size (differences are smaller than 1 percent in each province). Instead, Q4 shows larger discrepancies with respect to the official population projections, with the exception of Manica and Sofala. Zambezia's population is for instance 4 percent larger in the data than in the official population projections, and Cabo Delgado's, Tete's, Maputo City's weighted observations are almost 3 percent larger than the official projections.

$$\sum_{i=1}^{33,192} popwt_i = 77{,}001{,}976$$

Table 7. Weighted observations, by quarters and province and percentage difference with official projections

Province	Q1		Q2		Q4	
Niassa	1,605,447	(0.15)	1,639,527	0.98	1,687,015	1.82
Cabo Delgado	1,870,240	0.06	1,863,421	(0.72)	1,940,805	2.52
Nampula	4,921,236	0.15	4,977,222	0.64	5,119,972	2.22
Zambezia	4,723,467	0.29	4,750,739	0.24	4,986,397	3.83
Tete	2,445,483	0.18	2,478,197	0.52	2,589,174	2.85
Manica	1,906,449	0.12	1,904,083	0.31	1,953,189	(0.17)
Sofala	2,011,265	0.04	2,028,322	0.27	2,048,676	0.00
Inhambane	1,482,528	0.11	1,487,794	0.06	1,520,483	1.40
Gaza	1,399,552	0.13	1,416,831	0.92	1,434,984	1.28
Maputo Province	1,655,548	0.06	1,673,198	0.07	1,728,943	1.16
Maputo City	1,231,559	0.17	1,243,694	0.83	1,276,548	2.81
Total	25,252,774	0.13	25,463,025	0.37	26,286,185	2.08

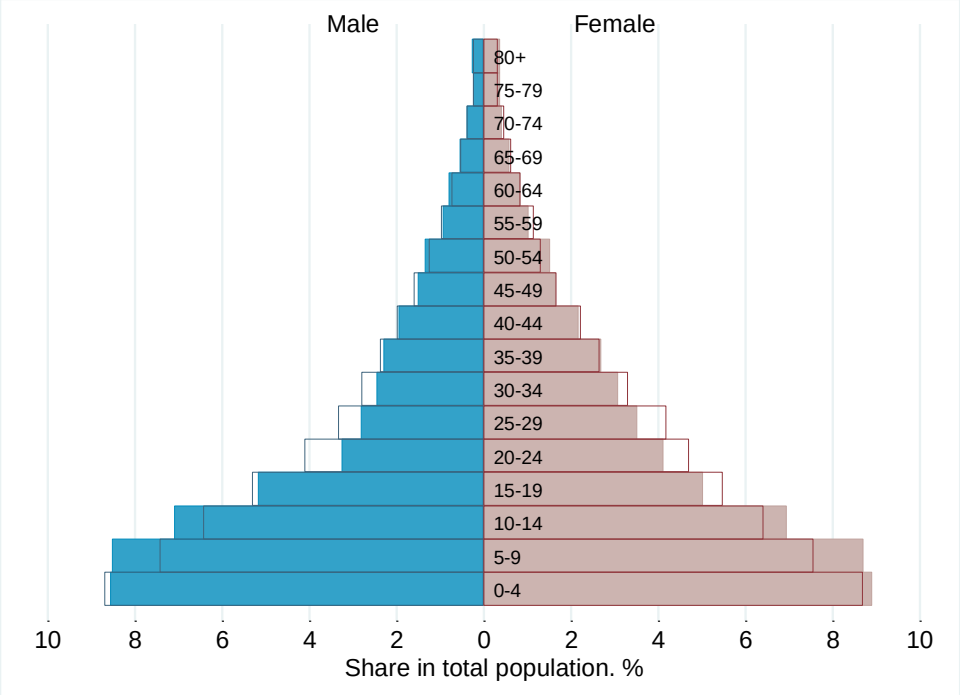
BOX 1. Set of households with missing observations in all data modules

For 686 observations, all basic individual and household characteristics found in the roster file, and in all other data modules are missing. These are single-individual households recorded in Q4. In the following, we will refer to quarter IV as Q4* whenever these 686 observations are dropped from the analysis.

Population growth rates to adjust population weight from quarter to quarter in order to match population growth rates vary from psu to psu. Also the growth rates of total population by psu do not follow a clear pattern (see Annex 2).

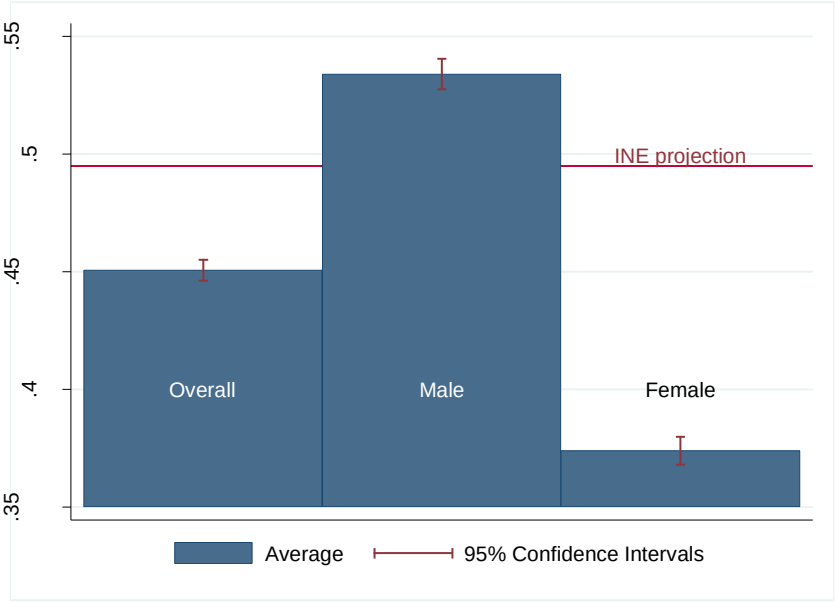
Figure 4 shows the age-gender pyramid built starting from IOF data (using the weighted observations found only in Q1) superimposed to the age-gender pyramid obtained by plotting the INE projections for 2014. The shape of the pyramid is typical of an expansive population with high birth and death rates and short life expectancy. We can see that the IOF data (filled bars) over-represents the number of children age 0-14 and under-represents young adults aged 15-34.

Figure 4. Gender-Age Pyramid, weighted observations from Q1 only (filled bars) and INE projections for 2014 (hollow bars)



Literacy rate for individuals aged 5 and above, using only information collected in Q1, is 45 percent (53.4 for males and 37.4 for females), as opposed to a value of 49.5 percent, reported in the INE projections for 2014 (INE, 2014), as summarized in Figure 5.

Figure 5. Literacy rate, age 5 and above, Q1.



Note: Survey design settings taken into account).

4. Food Expenditure

Food expenditure information is found in three sets of files: (i) the files containing the consumption diary of households (the "dd" files); (ii) the files containing information on the auto-consumption (the "ac" files); and (iii) files containing information on whether the household have eaten the day before each of the 7 days of the diary, and exactly what they had for breakfast, lunch and dinner (the "refeicoes" files).

The last set of data is difficult to utilize, given that the different meal options are not codified, and that the information lumps together the food consumed by all household members, without specific quantities. Moreover, although we would expect to find for each household 7 observations (one for each day of the survey), for some household there are less than 7 observations (most likely due to attrition within the diary week), while for other we find more than 7 observations -- up to 14 -- (which is harder to justify). Nevertheless, if better collected, this type of information may be useful to identify food-deprived households.

We concentrate therefore on the set of data containing information on food expenditure and auto-consumption diary. The diary (according to the instructions manual for enumerators) is compiled with the help of the enumerators for the first day, and left to the household for the following days, with the enumerator checking how the household is doing three days after the first visit.

4.1. Diary

The diary records purchase of food and beverages (including alcoholic beverages), electricity, liquid and solid fuels, non-electric appliances and other products for personal care (like disposable diapers) over a period of seven days.

Data record information on:

- local unit of measure of the item;
- quantity purchased expressed in the local unit;
- total purchasing cost;
- number of days the good is supposed to last for;
- place of purchase (shop, market, ambulant, other)

Moreover, added by the enumerator, it provides additional information on:

- standard unit of measure;
- quantity purchased expressed in the standard unit of measure[3]

Only a subset of households surveyed in the roster file respond to the consumption diary (about 93 percent in Q1, 91 percent in Q2 and just 86 percent in Q4, see Table 8), and households report purchases on average in 5 out of the 7 days of diary.

Table 8. Pattern of responses across diary days and quarters

	Quarter I	Quarter II	Quarter IV
Day 1	8,540	7,174	7,483
Day 2	7,823	6,737	7,150
Day 3	7,897	6,780	7,190
Day 4	7,901	6,732	7,205
Day 5	7,758	6,640	7,124
Day 6	7,704	6,584	7,029
Day 7	7,622	6,343	6,878
Total	10,694	9,439	9,709

[3] Two variables correspond to the quantity: original and auxiliary. The auxiliary variable includes cleaning from the NSO to correct for fieldwork data entry mistakes. However, no information is available to document the criteria which were followed to modify the original data.

As % Roster	93.0%	91.0%	85.8%

Households report on average purchase of about 17 items per week, with 25 percent of households reporting 6 items or less, and 75 percent of households reporting 26 items or less. Significant differences in these purchase patterns are found between rural and urban settlements: on average, an urban household report purchasing almost three times more items than a rural household (24 items as opposed to less than 9). By looking at the provincial pattern of purchases, Maputo City stands out as the place where households buy the larger set of items (about 26), while Niassa and Gaza are at the opposite side of the spectrum, with, respectively, 10 and 11 items purchased on average by households weekly (see Table 9).

Table 9. Average number of reported purchased items per week, by province and type of settlement

Province	Rural	Urban	Total
Cabo Delgado	10.07	21.05	15.81
Gaza	7.43	13.04	10.62
Inhambane	6.97	20.42	14.67
Manica	11.59	34.88	23.78
Maputo City		26.13	26.13
Maputo Province	14.88	24.47	21.32
Nampula	6.63	24.50	15.32
Niassa	6.47	15.09	10.36
Sofala	10.38	29.44	23.53
Tete	9.10	21.11	14.77
Zambezia	7.09	19.63	12.06
Overall	8.71	23.57	17.32

By looking at the average number of reported items per week, we can appreciate some differences among quarters, and among households being interviewed in all quarters, as opposed to those being interviewed in fewer instances. In the first quarter, households on average report a higher number of purchased items than in the second and third quarter, with the second quarter being the one where the number of reported items is on average the lowest. Moreover, the subset of households being interviewed in all three quarters of the survey reports the highest number of purchased items (about 20 in Q1, 18 in Q2 and 19 in Q4), without showing a sensible fatigue among quarters. The number of reported items drops considerably for the other categories of households, particularly the subset of households being interviewed only once (and especially households been interviewed only in Q2 and Q4).

Table 10. Average number of reported purchased items per week, by quarter and number of times the household has been interviewed

HH interviewed	Q1	Q2	Q4
Only in Q1	10.50		
Only in Q2		3.10	
Only in Q4			3.68
In Q1 and Q2	11.97	10.18	
In Q1 and Q4	11.13		10.17
In Q2 and Q4		6.56	8.32
In Q1, Q2 and Q4	19.78	17.72	19.00
Overall	17.82	16.55	17.50

On average, 96 percent of reported items in the diary belong to the category food and beverages (with peeks as high as 99 percent of items in Niassa, and as low as 94 percent in Gaza, Maputo City or Nampula).

Mozambicans' diet seems to be mainly vegetarian. On average, as summarized in Table 11), the most frequently purchased food items belong to the vegetable and tubers class (on average about 40 percent of

purchased food items), followed by bread and cereals (19 percent of total food purchased items) and fish and seafood (about 12 percent of purchased items). Annex 3 summarized the purchase pattern by province.

Table 11. Average households' food purchase pattern (items in each class of product as a share of total items purchased), by quarter

	Q1	Q2	Q4	Overall
Vegetables, including potatoes and other tubers	41.32	35.87	41.39	39.69
Bread and cereals	17.33	20.5	18.03	18.52
Fish and seafood	12.15	13.01	12.2	12.43
Food products n.e.c	7.52	7.85	7.69	7.67
Oils and fats	7.31	7.21	7.08	7.2
Fruit	6.28	7	6.75	6.65
Meat	2.66	2.99	2.59	2.74
Sugar, jam, honey, confitures	2.26	1.94	1.82	2.02
Mineral waters, soft drinks, juices	1.32	1.8	1.05	1.37
Milk, cheese and eggs	1.21	1.27	1	1.16
Coffee, tea and cocoa	0.31	0.21	0.19	0.24
Beer	0.11	0.14	0.07	0.11
Spirits	0.12	0.11	0.08	0.1
Wine	0.1	0.09	0.08	0.09
Total	100	100	100	100

Among vegetables and tubers, 14 items made up more than 90 percent of the total purchased items, with small variations across provinces, as summarized in Table 12.

Table 12. Most commonly purchased vegetables and tubers (as a share of total instances of vegetables and tubers purchased)

Coicop	Description	Cabo Delgado	Gaza	Inhambane	Manica	Maputo City	Maputo Province	Nampula	Niassa	Sofala	Tete	Zambezia	Overall
11731	Tomatoes	42.41	31.20	30.34	34.25	30.45	32.90	42.43	41.44	39.11	37.73	38.50	36.05
11743	Onion	23.60	10.52	20.05	25.81	14.20	16.31	21.94	16.74	30.43	16.32	19.23	20.31
11721	Cabbage	2.86	12.83	7.59	14.42	6.79	6.63	3.20	12.61	6.76	13.62	5.54	8.44
11751	Butter bean	5.82	5.71	3.82	5.74	4.10	4.46	3.68	9.55	6.93	8.19	10.79	6.03
11711	Lettuce	1.33	11.14	13.46	2.30	11.35	9.28	2.15	3.04	1.93	1.61	1.16	5.23
11741	Garlic	0.91	1.66	2.20	2.25	5.88	5.99	2.28	0.49	1.94	2.71	1.46	2.99
11722	Cabbage	1.29	5.97	1.83	2.93	2.88	3.72	2.31	1.41	2.88	2.68	2.73	2.82
11732	Pepper	2.75	1.63	2.07	1.06	4.00	3.70	2.29	0.76	1.60	1.32	0.95	2.18
11781	Sweet potato	1.21	0.50	0.63	2.79	0.27	0.22	2.20	5.26	1.13	2.95	6.77	1.91
11712	Pumpkin leaves	0.34	5.03	1.91	1.26	3.26	2.65	0.49	1.25	0.82	1.47	1.72	1.80
11752	Nhemba Beans	5.60	0.87	1.64	0.75	0.67	0.81	2.52	1.22	1.16	1.14	1.81	1.43
11771	Fresh potato	1.52	1.11	1.47	0.40	2.38	2.10	2.01	0.97	0.60	1.99	0.68	1.42
11744	Carrot	0.05	1.09	1.12	0.25	4.39	3.85	0.19	0.17	0.40	0.43	0.57	1.42
11715	Nhemba bean leaf	2.14	0.73	2.90	0.14	1.68	1.23	0.35	0.23	0.66	2.26	0.33	1.12

Almost three quarters (71 percent) of purchased bread and cereals product is made of bread, followed by shelled rice (12 percent) pasta (6 percent) and corn flour (4 percent), as shown in Table 13. Some dietary variations are appreciable across provinces: for instance, in Cabo Delgado, and to a lesser extent also in Zambezia, Niassa and Nampula, rice is consumed more than in the other provinces. Also, in Zambezia ther is a larger consumption of corn flower (16 percent of total purchases in the cereals group, as opposed to just 4 percent overall).

Table 13. Most commonly purchased bakery products, pastry, cereals and other cereal products

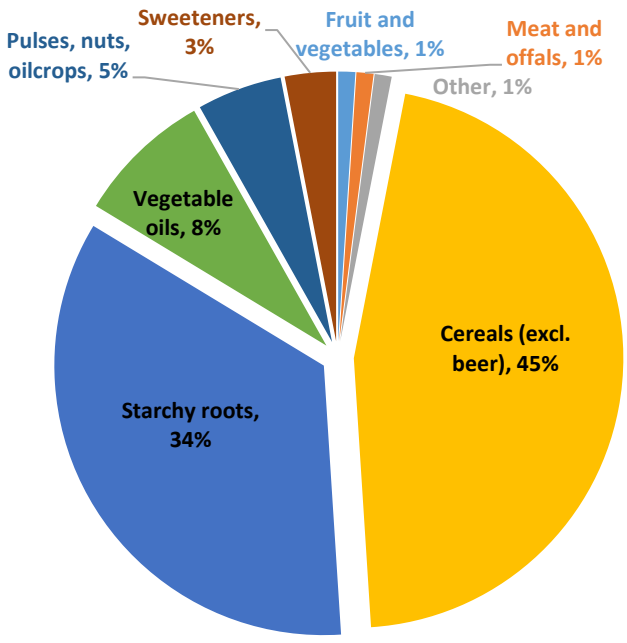
Coicop	Description	Cabo Delgado	Gaza	Inhambane	Manica	Maputo City	Maputo Province	Nampula	Niassa	Sofala	Tete	Zambezia	Overall
11161	Bread	43.17	81.20	74.00	67.72	81.65	81.71	48.54	55.15	78.70	74.85	45.88	70.76
11111	Shelled rice	32.99	8.84	13.69	10.74	6.02	6.68	18.16	20.19	7.94	6.09	21.38	11.71
11183	Pasta Spaghetti	6.36	3.42	3.59	6.43	6.55	6.51	5.34	8.76	5.77	4.45	4.22	5.67
11141	Corn flour	6.44	2.81	4.25	0.18	2.01	2.57	11.49	1.58	2.07	0.15	15.95	4.19
11176	Cakes and pastries	7.35	0.31	1.31	6.43	0.29	0.15	7.11	7.11	1.89	8.83	3.38	2.88
11171	Cookies	0.63	0.61	0.93	2.46	0.95	0.65	0.77	2.43	1.29	2.27	2.55	1.17
11146	Manioca flour	0.80	0.00	0.00	0.02	0.04	0.04	5.51	0.32	0.00	0.00	2.09	0.76

Our findings do not differ too much from the dietary profile described in the latest FAO Nutrition Country Profile:

"*Maize, cassava, sorghum and millet are prepared as a porridge locally known as xima – the main traditional food –, and normally eaten with different stews made of green leafy vegetables, enriched with groundnut and/or coconut milk, beans, fish (fresh and dry, from sea or river) or other seafood when available; meat (chicken and bush meat) is rarely eaten, only on festive occasions. The stews are prepared with oil, onion and tomato or boiled with water. […] Consumption of milk and milk products is very low, especially in rural areas. In urban areas, people consume fresh milk, yogurt, butter and cheese. […] With the exception of green leafy vegetables, onion and tomatoes, consumption of other vegetables and fruit (banana, mango, orange, paw-paw, pineapple, and other wild fruit) is low except when in season*" (FAO, 2011).

As shown in Figure 6, almost the totality of energy assumed in the average Mozambican diet is of vegetable origin.

Figure 6. Percentage of energy provided by major food group



Source: FAO, 2011, figure 3.

The diary does not report an overall consumption of starchy roots as we would expect from the FAO profile (Figure 6).

4.2. Auto-consumption

Data record information on:

- local unit of measure of the item;
- quantity consumed expressed in the local unit;

Moreover, added by the enumerator, it provides additional information on:

- standard unit of measure (the enumerator is supposed to check the conversion factor using a scale);
- quantity consumed expressed in the standard unit of measure (two versions: original and auxiliary, see note above)
- unit value of the item (two versions: original and auxiliary). The enumerator is supposed to report the unit value of the item in the closest market. In rural areas, the unit value should be based on the price list collected by the Controller in the Community questionnaire, while in urban areas the enumerator should collect the prices in the nearest market.

More than 2/3 of households reports auto-consumption, in particular, with respect to the number of households recorded in the roster files, 68 percent of households in Q1, 69 percent in Q2 and 64 percent in Q4.

Table 14. Pattern of responses across diary days and quarters, auto-consumption

	Quarter I	Quarter II	Quarter IV
Day 1	6,611	5,792	6,168
Day 2	6,432	5,729	6,095
Day 3	6,380	5,750	6,058
Day 4	6,397	5,708	6,061
Day 5	6,331	5,624	5,994
Day 6	6,258	5,600	6,028
Day 7	6,281	5,460	5,972
At least one day	7,832	7,177	7,232
As % Roster	68.07%	69.19%	63.90%

Auto-consumption, as expected, is more frequent in rural settlements, where about 65 percent of households reports auto-consumption at least one time in the seven-day diary period (see Table 15).

Table 15. Pattern of responses across type of settlement and quarters, auto-consumption

	Q1	Q2	Q4
Rural	65.09	62.57	64.86
Urban	34.91	37.43	35.14

Households report on average about 15 auto-consumption items over the 7-days diary (it varies from about 14 items in Q2, to 15 items in Q1 and 16 items in Q4). Rural households report on average more than double the number of items reported on average by urban households, as shown in Table 16.

Table 16. Number of items reported, by quarters and type of settlement

	Q1	Q2	Q4
Rural	18.20	18.18	20.46
Urban	7.67	7.10	8.72
Overall	14.53	14.03	16.34

As reported in Table 17, overall, auto-consumption refers to vegetables (36 percent of reported items), bread and cereals (mainly flour of different kinds, for 28 percent of all reported items), firewood (23 percent of overall reported items) and fruit (10 percent of total reported items). Other items (belonging to the coicop classification groups meat, fish and seafood, food products non else classified, milk, cheese and eggs, water, oils and fats, spirits, wine, sugar, jam, honey, chocolate and comfitures, mineral waters, soft drinks, juices) add up to less than 5 percent of the total reported items.

Table 17. Most common item reported in auto-consumption diary section

COICOP group	Frequency in total observations
Vegetables	36.13
Bread and cereals	28.14
Solid Fuel (firewood)	22.65
Fruit	9.87
Meat	1.57
Fish and seafood	1.05
Food products n.e.c	0.29
Milk, cheese and eggs	0.27
Water	0.02

The most frequently reported items are the following: Firewood; Cornflour; Cassava flour; Mango; Sheets of mandioqueiraira; Pumpkin leaves; Peanut (shell and kernels); Beans stew; Boer beans; Coconut (whole); Nhemba bean leaf; Cacana; Fresh manioc; Corn (Grain); Shelled rice; Sweet potato; Okra; Tomato; Sweet potato leaves.

The fourth most common cited item is coded "011719," which does not correspond to any good in the questionnaire, and it is labelled very differently in the data, although it is mostly linked to some green leafy vegetable, like "amaranto", "moringa", "thiaca", "tsunga".

4.3. Measurement unit conversion factors

Items are reported in the diary in local unit of measure. Such units are not codified, and the numerous misspellings create difficulties in accessing the unit of measure variable. From a preliminary cleaning of the variable, we are able to identify a list of 18 unit of measure denominating at least 1000 items and denoting 98 percent of the reported items in the diary of consumption, as reported in Table 18.

Table 18. Most frequently used local unit of measure

Unit of Measure Portuguese	English	Frequency on total purchased items
Montinho	Montinho	30.11
Unidade	Unit	27.59
Quilograma	Kilogram	8.15
Plastico	Plastic	6.26
Pacote	Package	5.32
Copo	Cup	5.25
Molho	Bunch	4.19
Saqueta	Sachet	3.03
Garrafa	Bottle	2.37
Lata	Tin	0.90
Caneca	Coffee Mug	0.82
Calice	Cup	0.75
Tampa	Cover	0.73
Litro	Liter	0.69
Bidao	Bidao	0.55
Saco	Bag	0.55
Pedaco	Piece	0.40
Balde	Bucket	0.33

The same item may be recorded using a number of different unit of measure. For instance, *tomatoes* is recorded using 214 different units of weight. After cleaning the variable of typos and misspellings, there are still 46 different unit of measures denoting the item *tomatoes*, although purchase of tomatoes is reported in *Montinhos* in 97 percent of the instances.

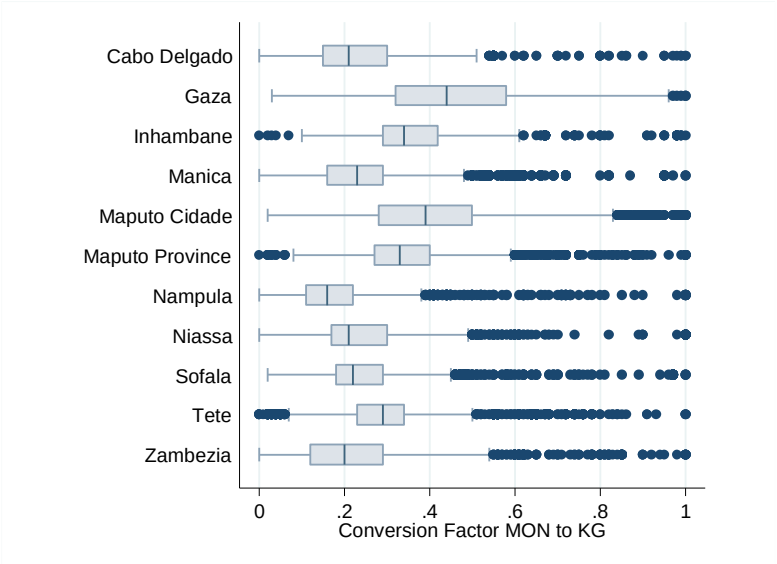
Enumerators are then supposed to report quantities in standard units (see note above on the difference between the "original" and "auxiliary" values). In 32 percent of purchased items (30 percent of food and beverages items) quantity expressed in standard unit is not recorded. Standard unit of measure are not reported for all items belonging to the solid fuel coicop code (0454), mainly vegetable carbon and firewood.

Moreover, conversion factors between local unit and standard unit is not homogeneous even within the same item, or province. Given $q_{i,j}^{p}$ being the quantity in local units for item *i* as reported by household *j* living in province *p*, and $\hat{q}_{i,j}^{p}$ being the quantity in standard units as converted by enumerators for item *i* purchased by household *j* living in province *p*, we would not reasonably expect the conversion factor to vary much across households living in the same areas (c_i^p constant for all *j*):

$$q_{i,j}^{p} * c_i^p = \hat{q}_{i,j}^{p}$$

In reality, we see a large range of conversion factors, even for the same item, as shown in Figure 7 for the case of tomatoes.

Figure 7. Conversion Factor, local unit (Montinhos) to standard unit (Kilograms) for tomatoes, by province.

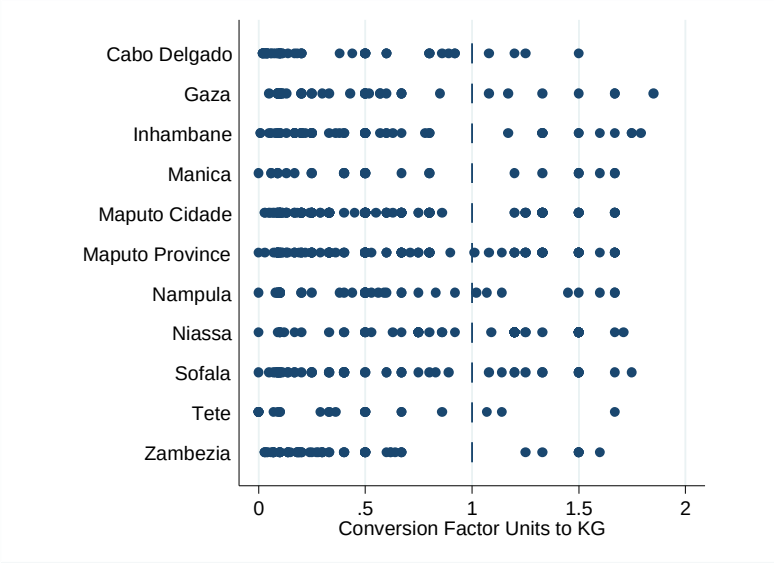


Note: conversion factor values capped at 1, although there are values (less than 1 percent of the total) higher than 1, going up to 1,000.
The figure (and the followings) is a box and whiskers plot. Each box ranges from the 25th percentile to the 75th percentile. The vertical line in the middle of a box represents the median. The Lines, often called whiskers, are drawn to span all data points within 1.5 IQR of the nearer quartile. That is, one whisker extends to include all data points within 1.5 IQR of the upper quartile and stops at the largest such value, while the other whisker extends to include all data within 1.5 IQR of the lower quartile and stops at the smallest such value. Dots at each side of the whiskers represent outliers (see Cox, 2009 for more details and discussion about this type of graphs).

As another example, we check the unit of measure and conversion factors for Bread (coicop 011161), which is the second most frequent food purchase recorded in the households' diary. In 99.79 percent of instances bread is reported in not better specified "*units*", and the standard unit of measure corresponding

to bread is *kilograms* for all instances. The conversion factor is, with few outliers, consistent across provinces and equal to 1, e.g. 1 *unit* of bread corresponds to 1 *kilogram* (see Figure 8).

Figure 8. Conversion Factor, local unit (Units) to standard unit (Kilograms) for bread, by province.



Note: conversion factor values capped at 1.5, although there are values (less than 1 percent of the total) higher than 1.5, going up to 10,000.

But in 33 percent of instances the enumerators did not report the quantity translated in standard units, as summarized in Table 19.

Table 19. Observations with missing standard quantity for bread, by province

Province	Missing standard quantity, percent
Cabo Delgado	30.68
Gaza	34.12
Inhambane	33.57
Manica	35.81
Maputo Cidade	32.40
Maputo Province	31.90
Nampula	31.24
Niassa	30.17
Sofala	33.60
Tete	37.78
Zambezia	29.33
Overall	32.86

BOX 2. Conversion Factor for Bread

From conversations with INE and MEF, we found out that the conversion factor for bread reported in the data is wrong. In Mozambique, bread comes in pretty standard shapes and sizes of about 125g to 250g. Following the strategy adopted by MEF, we adjust standard units of bread to 125g for all those instances where the unit value was smaller and 3MT, and to 250g for all those instances where the unit value was larger or equal than 3MT. This adjustment has a very large impact on the total caloric intake found in the

data.

As third example, we look at the measurement units and conversion factors for *onions* (coicop code 011743), which is the third most purchased food item. Quantity for onions is reported in more than 30 different units of measure: in 80 percent of the cases the local unit is *units*, in 16 percent of the cases is *montinhos* and for 2 percent of reported purchased is *kilograms*.

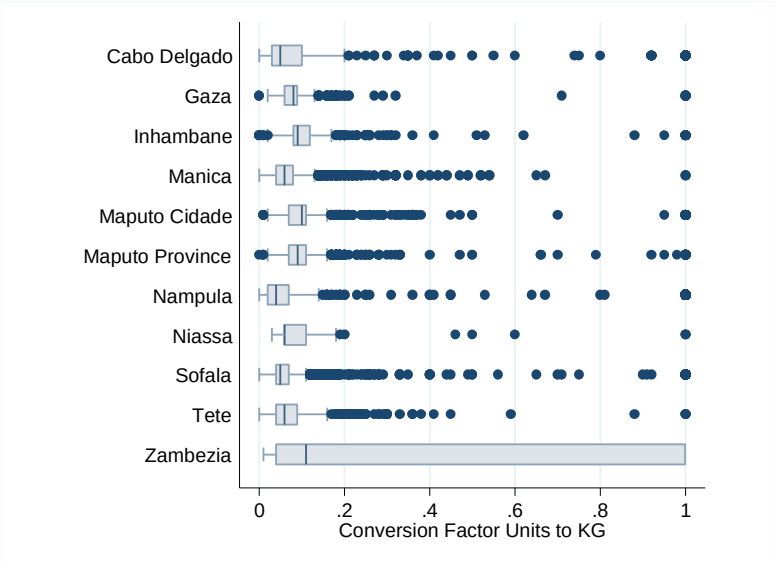
Also for the case of onions, in 30 percent of the cases without large variation across provinces, quantity is not reported in standard units (see Table 20).

Table 20. Observations with missing standard quantity for onions, by province

Province	Missing standard quantity, percent
Cabo Delgado	35.43
Gaza	24.92
Inhambane	28.17
Manica	30.18
Maputo Cidade	29.72
Maputo Province	26.35
Nampula	27.25
Niassa	29.47
Sofala	32.37
Tete	30.79
Zambezia	28.34
Total	30.04

The conversion factor for onions between units and kilograms (see Figure 9) varies little around a median value of about 0.1 in all provinces, but it is very noisy in Zambezia.

Figure 9. Conversion Factor, local unit (Units) to standard unit (Kilograms) for onions, by province.



Note: conversion factor values capped at 1, although there are values (less than 1 percent of the total) higher than 1, going up to 10,000.

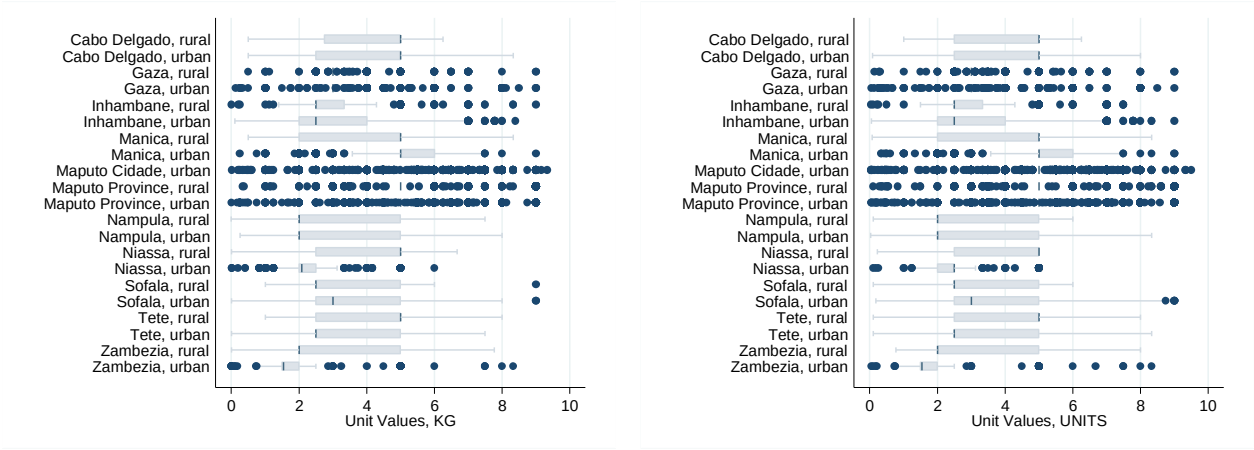
Summarizing, the conversion from local to standard units seems problematic. First, for about one third of observations quantity reported in standard units are missing. Second, conversion factors do not seem to follow any predictable pattern. This second issue combined with the first one means that any attempt to impute missing quantities in standard will not be grounded on a sound and justifiable basis.

4.4. Unit values

Unit values are the price per unit of good paid by households, and may be computed dividing the total value of the purchase by the quantity purchased expressed in local or in standard units. We would expect unit values of a specific good not to vary much for households living in the same areas since the market prices faced by different households are likely to be very similar, even if not the same since prices paid are likely influenced, among other factors, by amounts purchased and individuals' bargaining power.

Figure 10 reports the unit values (per *kilogram*, left panel and per *units*, right panel) of purchased bread. Notwithstanding outliers and some variability, in almost all provinces and settlements unit values range between about 2 Metical (MT) and 5 MT, with 5 being the median unit values in most of geographical areas (exceptions being Gaza, urban Inhambane and urban Sofala – with a median unit value of about 3 MT; urban Niassa – about 2 MT; and urban Zambezia – about 1.5 MT). Since the conversion factor between units and kilograms was about 1, unit values do not differ much whether quantities are expressed in local or standard measurement units.

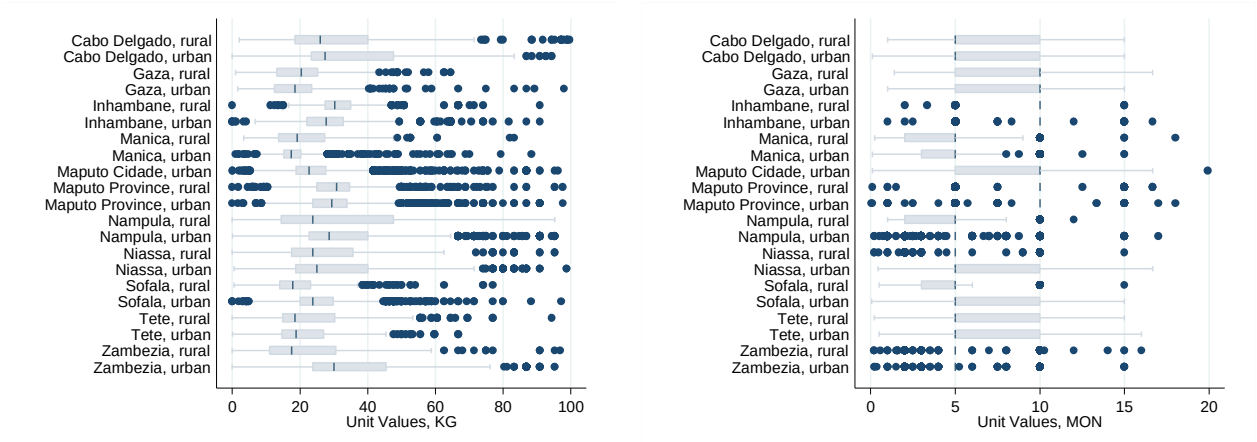
Figure 10. Unit value for bread (standard and local units), by province and type of settlement



Note: Unit values capped at 10.

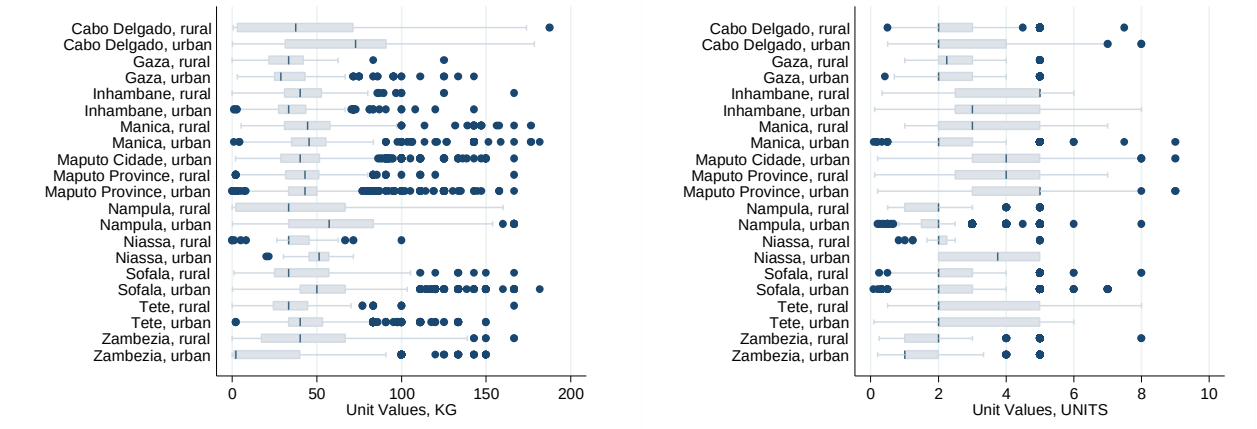
Looking at the unit values of the other two most frequently purchased food goods (tomatoes and onions), the variation range using standard unit is larger than the unit values obtained by dividing for quantity expressed in local units, suggesting that the conversion factors from local to standard units add noise.

Figure 11. Unit values for tomatoes (standard and local units), by province and type of settlement.



Note: Unit values capped at 100 (left panel) and to 20 (right panel).

Figure 12. Unit values for onions (standard and local units), by province and type of settlement.



Note: Unit values capped at 200 (left panel) and 10 (right panel).

4.5. Checking unit values with prices from the community questionnaire

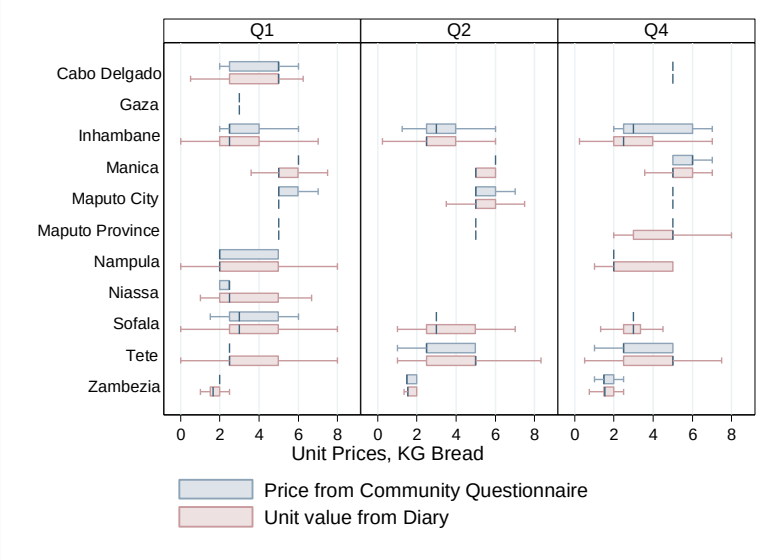
The community questionnaire collects information on prices for about 190 items, collected at primary sampling unit level, and in each quarter, for a total of 79,778 different prices. Different prices may be reported for the same coicop code within psu and quarter. In more than 25 percent of the cases, this instances refer to coicop code “011361”, which corresponds to “dried fish”. The multiple prices are to be imputed to the fact that there are different types of dried fish (for instance, Soil fish, Utaka, Nikussi, just to mention some).

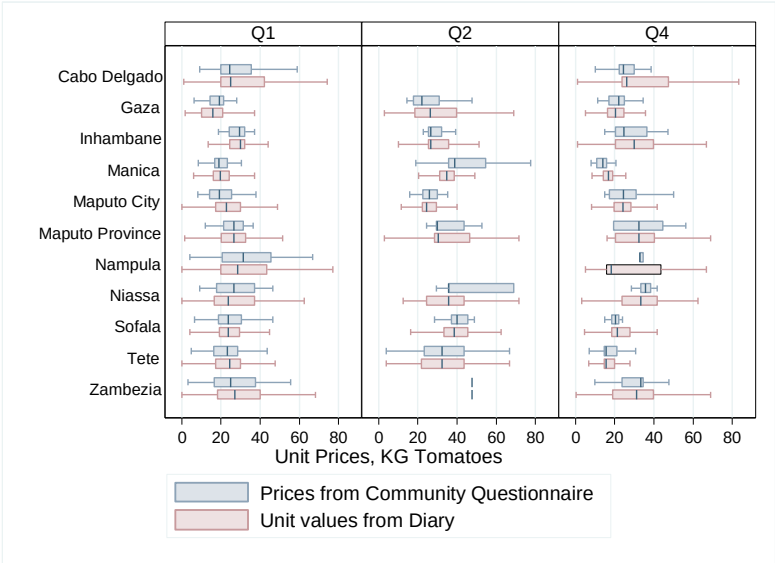
Despite the ambitious plan for collecting the community questionnaire, prices were not collected everywhere in each quarter, and for 80 items found in the diary we cannot find any correspondence in the community questionnaire (about 33 percent of codes found in the diary, or 62 percent of total reported items).

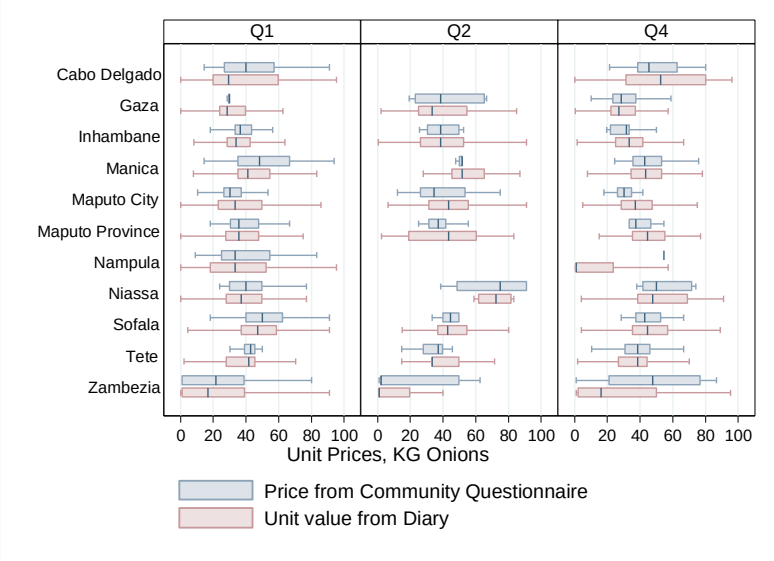
In the following (Figure 13), we compare unit prices obtained from the diary of consumption with prices collected in the community questionnaire for the three most consumed items already analyzed above:

bread, tomatoes and onions. Overall, we find that ranges of prices and unit values follow a very close pattern, with, as expected, unit values being on average more disperse.

Figure 13. Unit values from diary and prices from community questionnaire, by quarter and province, Bread, Tomatoes, Onions







4.6. Food eaten outside home

Section 4 of the Employment questionnaire for people aged 5 and over contains a section on individual expenditures in the week before the interview. The 13 items refer to transportation expenditures (public transport, gasoline, parking), cigars and cigarettes, food and drinks consumed outside home. Although the questionnaire is supposed to collect information on individual expenditures, we did not find the variable with the information of the household member actually doing the purchases, therefore we consider the aggregate at household level.

The share of households reporting consumption of food and beverages outside home (Meals outside home, Pastries, Hamburgers, Sandwiches, Other Bar meals or Beer, Wine, Refreshments, Mineral water, Juices, Other beverages) during the week preceding the interview is about 55 percent. This share varies from 30 percent (Napula, Q2 or Niassa, Q4) to 80 percent (Mapyto City, Q4) of the total number of interviewed households in each quarter and province, as summarized in Table 21.

Table 21. Households reporting consumption of food outside home in the week before the survey, by province and quarter

	Q1		**Q2**		**Q4***	
	Obs	% HH	Obs	% HH	Obs	% HH
Cabo Delgado	527	54.67	436	51.60	459	54.51
Gaza	416	50.61	349	43.73	355	44.99
Inhambane	481	56.19	414	50.36	423	52.94
Manica	657	73.99	551	64.82	493	59.11
Maputo City	841	77.65	752	75.96	780	79.67
Maputo Province	794	76.13	739	73.39	731	73.69
Nampula	557	37.89	406	29.55	497	36.36
Niassa	371	42.99	237	30.62	249	30.44
Sofala	773	78.40	699	71.33	652	66.19
Tete	559	57.10	466	52.18	572	61.37
Zambezia	634	40.85	371	35.81	556	43.03
Overall	6,610	57.45	5,420	52.27	5,767	54.26

4.7. Total Caloric Intake

The table containing the caloric content of foods and beverages provide the calories per 1g in a list of 422 food and beverages items.

By merging the food consumption found in the diary (both food purchases and auto-consumption), we do not find the corresponding caloric intake of 1,252 items (0.2 percent of the total items – 521 observations refer to beer). For this residual set of items, we impute the average caloric intake of the foods and beverages belonging to the higher 4-digits coicop classification.[4]

For 2,696 items (less than 1 percent of the total food items from diary and auto consumption), quantities are not recorded in standard units. We impute quantity in standard units using the median conversion factor for the same good, expressed in the same local unit, in the same province of the item with missing values. For the residual 57 items still with missing quantities expressed in standard units[5], we impute the median standard quantity consumed for that good in the same province.

[4] For example, in the diary of consumption, beer is denoted with coicop code 021321. In the caloric conversion factor, beer is either denoted 21300 (blonde beer) or 21323 (blonde beer in a 0.33 liter can). We take the average caloric intake corresponding to the two codes "0213" and we assign this average value to the item found in the diary.
[5] because there are no other items belonging to the same coicop classification consumed in the same province and expressed in the same local value

Although for 90 percent of food items quantities in standard units are expressed in Kg, 5 percent are denominated in Liter (of which, 85% oil, 6% refreshment beverages, 3% fruit juices) and 5 percent in Units (of which, 63% coconuts, 15% alive chicken, 15% chicken eggs, 2% sugar cane). Hence, we need to find a conversion table from Liter to Kg and from Units to Kg. For example, we need to assign a weight to one unit of coconut, a live chicken or one egg, or to one liter of vegetable oil or one liter of juice. We apply the same conversion tables used in the previous poverty assessment for Mozambique and summarized in Table 22 and Table 23.

Table 22. Conversion factor Liter to Kg

One Liter of:	Code	Corresponds to:
Fresh milk	11412	1.0167 kg
Condensed milk	11431	1.275 kg
Soda	12221	1.0333 kg
Beer	21300	1.0333 kg
Cooking oil	11541	0.9083 kg
Wine	21211	0.99751kg

Source: Previous poverty assessment, and USDA for Wine.

Table 23. Conversion factor Units to grams

One Unit of:	**Code**	**Corresponds to:**
Chicken egg	11471	52 g
Coconut	11676	880 g
Chicken	211281	836.8 g
Duck	211282	432 g
Bread	11161	200 g
Sugar Cane		1200g

Source: Previous poverty assessment, and USDA for Sugar Cane.

After applying the conversion factors for Liter and Units, 2,236 items (0.3% of the total) still were left without quantity expressed in grams. In such instances, the median quantity by province and code was imputed. For the 236 items that are still left without a quantity in grams, the median quantity nationwide was imputed.

We therefore aggregate the expenses and auto consumption for each item and each household making sure to take into account only what was consumed over the period of one week. Recall, in fact, that expenses and auto-consumption are collected for a period of one week, and that some purchases are meant to last for a certain number of days. Therefore, quantities are normalized so that they refer to weekly quantities: if a purchase is recorded to last for more than 7 days, the final quantity is obtained by dividing the recorded quantity for the number of days the households is planning to consume it and multiplied by 7.

Then, we divide by 7 (number of days in the week) to get daily household food consumption.

Finally, we need to take into account size and composition of the household. Although the official poverty methodology followed in Mozambique uses a per capita definition, we also check results using an equivalence of scale built using FAO's recommended dietary allowances, as reported in the following **Error! Reference source not found.**

Table 24. Equivalence of scale from Recommended Dietary Allowances

	Male	Female
[0-1)	0.27	0.27
[1-3]	0.45	0.45

[4-6]	0.61	0.61
[7-9]	0.73	0.73
[10-12]	0.86	0.73
[13-15]	0.96	0.83
[16-19]	1.02	0.77
[20-50]	1	0.77
50+	0.86	0.79

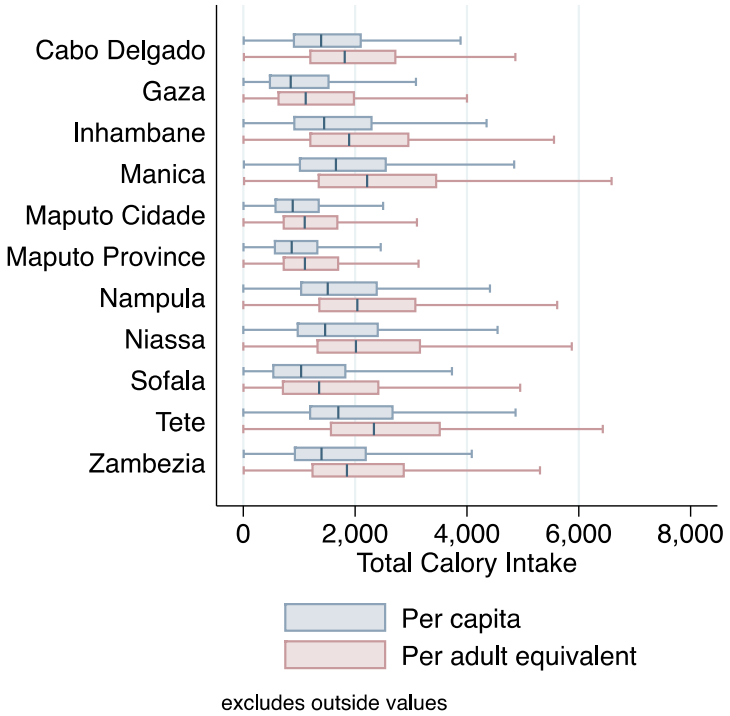
Source: FAO (1989)

Table 25 summarizes the median per capita and per adult equivalent caloric intake, while Figure 16 gives an idea of the distribution of total per capita and per adult equivalent caloric intake by province.

Table 25. Median daily caloric intake, per capita and per adult equivalent, by provinces and quarters

	Q1		Q2		Q4	
	per capita	per adult equivalent	per capita	per adult equivalent	per capita	per adult equivalent
Cabo Delgado	1,429.9	1,840.7	1,384.0	1,814.9	1,377.4	1,805.0
Gaza	991.7	1,289.8	777.1	1,005.6	842.5	1,096.4
Inhambane	1,519.7	1,990.6	1,447.2	1,891.8	1,347.7	1,765.7
Manica	1,822.5	2,413.8	1,380.0	1,832.0	1,702.9	2,271.7
Maputo Cidade	904.4	1,114.1	901.1	1,125.8	843.3	1,060.5
Maputo Province	920.5	1,182.7	849.8	1,089.6	833.8	1,054.7
Nampula	1,542.2	2,077.3	1,508.0	2,053.3	1,476.8	1,989.5
Niassa	1,532.7	2,105.6	1,371.7	1,866.5	1,534.1	2,094.7
Sofala	1,114.3	1,438.1	1,040.7	1,357.6	984.4	1,265.7
Tete	1,773.9	2,397.7	1,590.9	2,151.5	1,758.7	2,423.4
Zambezia	1,439.3	1,910.3	1,350.7	1,779.6	1,412.5	1,871.4

Figure 14. Distribution of caloric intake, by province, per capita and per adult equivalent.



A total of 1,097 households reports no food consumption, and hence have 0 caloric intake (in the official file for poverty analysis 910 households are recorded with a per capita food consumption of zero. These households are mainly found (73 percent of instances) in Q4. When removing those households with missing information (686 nuclear households found in Q4), the number of households with 0 caloric intake drops drastically to 317 households.

Table 26. Distribution of households with missing food consumption, by province and quarter.

	Q1	Q2	Q4	Q4*
Cabo Delgado	7	12	105	15
Gaza	6	15	45	12
Inhambane	5	10	60	6
Manica	4	2	42	4
Maputo City	22	25	106	27
Maputo Province	9	29	51	10
Nampula	13	21	97	18
Niassa	9	20	50	12
Sofala	18	4	0	
Tete	9	18	46	6
Zambezia	14	18	205	17
Total	116	174	807	127

Note: Q4* is built from Q4 by removing the 686 observations with no information

Moreover, as summarized in the following **Table *27***, a sizable number of households have a per capita caloric intake below 1,000 Kcal per day, ranging from 66 percent in Gaza in Q2 to 23 percent in Manica in Q1. The same shares in adult equivalent terms are smaller, but still spanning between 16 percent in Nampula (Q2) to 53 percent in Gaza (Q2). Such low values of caloric intake consistently across provinces is difficult to justify, and raises doubts about the quality of the information collected in the diary of purchases and autoconsumption.

Table 27. Calories-Deprived households (household with caloric intake<1,000 or =0), by quarter and province

	Per capita			Per adult equivalent		
	Q1	Q2	Q4*	Q1	Q2	Q4*
Cabo Delgado	41.7	38.2	40.3	27.8	25.8	29.2
Gaza	55.0	66.3	61.0	43.7	53.4	49.2
Inhambane	29.1	31.9	37.3	16.6	21.0	23.0
Manica	23.3	39.2	25.7	16.8	31.6	19.3
Maputo Cidade	57.9	56.4	61.1	44.2	42.9	48.6
Maputo Province	55.0	60.7	63.0	39.9	47.4	46.2
Nampula	27.6	27.5	30.7	17.1	16.4	18.9
Niassa	32.6	41.1	28.8	25.3	32.2	19.8
Sofala	49.5	53.2	56.0	37.4	42.0	44.2
Tete	32.1	40.1	31.9	24.5	31.8	24.9
Zambezia	31.2	37.5	30.0	19.1	24.1	16.7

1.1.1. Including Food Outside Home

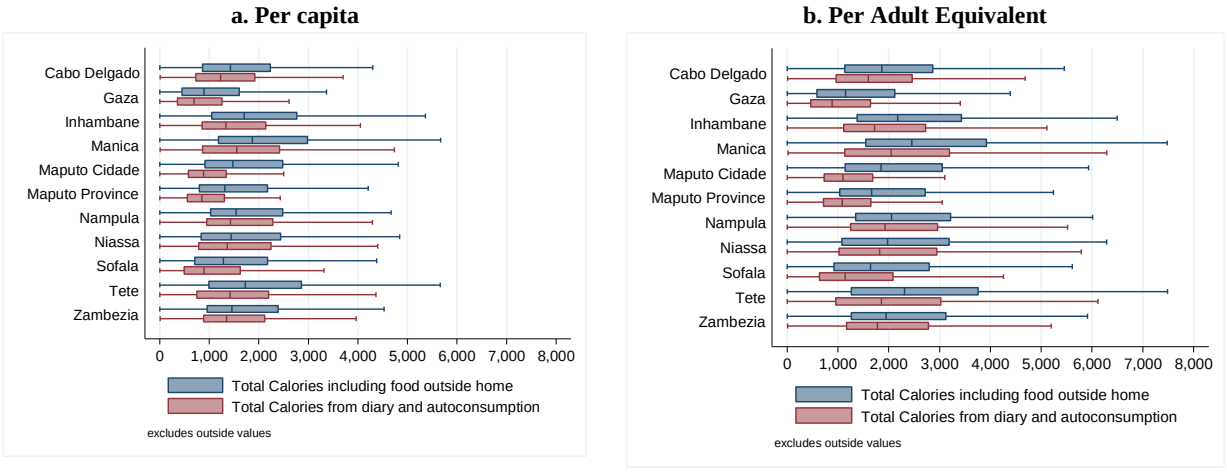
One of the reasons why the caloric intake found in the diary of food expenses and auto consumption is so low may be that we are not taking into account calories provided by food eaten outside home. In particular, this would explain why caloric intake is so low in Maputo.

In order to take into account the caloric value of food consumed outside home, we compute for each household the average cost per Kcal consumed, dividing the total food consumption found in the diary

and in the auto consumption modules by the total caloric intake in the same household. We price calories at the median "cost per Kcal" in the same district. Dividing the total value of food consumption outside home by this "cost per Kcal" value, we can get a gross approximation of the calories belonging to food outside home.

As summarized in **Figure *15*** and detailed in Table 28, adding this rough estimate of calories from food outside home increases the median daily Kcal intake sensitively in Maputo City and Maputo Province, and also in Inhambane, Manica, Sofala and Tete.

Figure 15. Distribution of total daily Kcal intake with and without considering Kcal in food consumed outside home



The share of calories-deprived households decreases sensitively when adding food outside home, still it remains above 20 percent almost everywhere.

Table 28. Calories-Deprived households (household with caloric intake<1,000 or =0), by quarter and province, with or without including food outside home

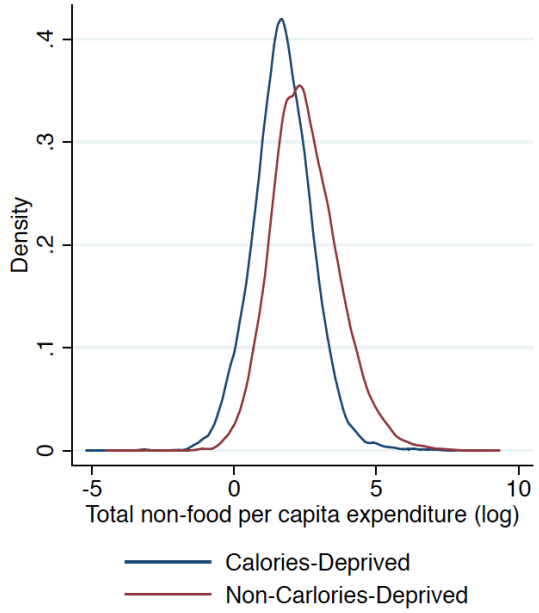
		a. Per capita			b. Per adult equivalent		
		Q1	Q2	Q4	Q1	Q2	Q4
Niassa	without	32.56	41.09	28.73	25.26	32.17	19.80
	with	26.77	39.28	26.89	20.97	30.75	18.34
Cabo Delgado	without	41.70	38.22	40.26	27.80	25.80	29.22
	with	30.71	31.36	34.68	19.09	19.64	22.21
Nampula	without	27.55	27.51	30.72	17.07	16.45	18.95
	with	21.97	24.60	25.24	12.93	14.26	14.63
Zambezia	without	31.19	37.36	29.95	19.07	23.94	16.72
	with	25.71	33.01	24.61	14.88	20.85	13.24
Tete	without	32.07	40.09	31.87	24.51	31.80	24.89
	with	21.35	31.69	23.93	15.32	24.75	18.03
Manica	without	23.31	39.18	25.78	16.78	31.65	19.30
	with	13.51	31.76	17.03	9.35	24.82	11.87
Sofala	without	49.49	53.16	56.04	37.42	42.04	44.16
	with	30.32	37.35	43.15	19.98	26.43	31.07
Inhambane	without	29.09	31.87	37.30	16.59	21.05	23.03
	with	19.28	23.11	25.03	10.40	14.11	15.14
Gaza	without	54.99	66.29	60.96	43.67	53.38	49.18
	with	41.85	54.89	51.46	31.63	41.73	40.30
Maputo Province	without	55.03	60.68	63.00	39.88	47.37	46.17
	with	32.31	38.43	37.10	19.65	27.41	23.59
Maputo City	without	57.89	56.36	61.08	44.23	42.93	48.52
	with	29.27	28.38	31.56	20.59	19.70	20.94

1.1.2. Checking non-food expenditure of calorie -deprived households

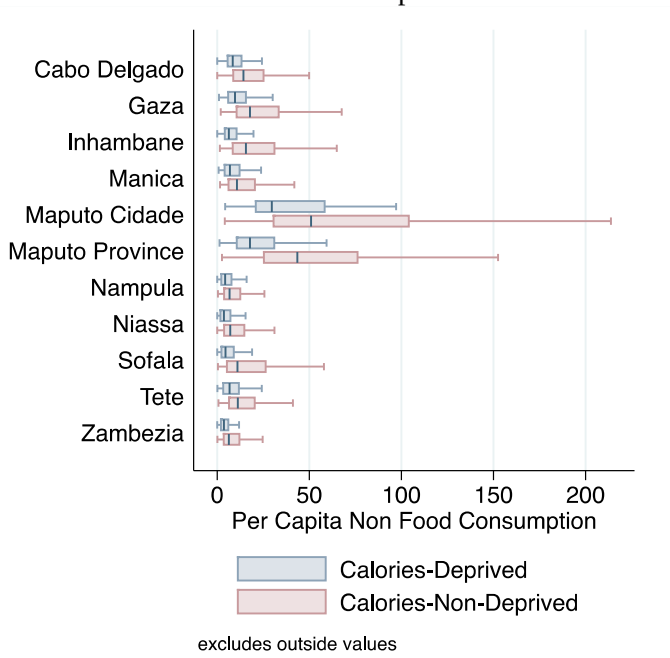
As summarized in **Figure *16***, on average, calories-deprived households consume less on non-food items than non-calories-deprived households. Nevertheless, some households do spend a large share of their total expenditure on non-food, even though

Figure 16. Non-food consumption for calories-deprived and non-calories deprived households

a. Density



b. Distribution across provinces



2. Non-Food Expenditure

Information on non-food expenditure is contained in different files: the diary of consumption, the diary of auto-consumption, the module with yearly and monthly expenditure, and the employment module. Particular importance we will give to durable goods and housing.

2.1. Durables

Durable goods are consumer products that withstand wear and tear or decay and that can be used over a relatively long period without being depleted or consumed. The appropriate measure of their consumption should not be the purchase value; instead, it should be the value of services that the household receives from their possession over the relevant time period.

Information on a list of 32 durable goods[6] includes:

[6] Air conditioners; Beds and bunk beds; Bicycle; Charcoal and / or firewood stoves; Coal iron; Code; Computers (incl. Keyboard, mouse, monitor, CPU, speakers, sound card, CD Rom, etc.); Electric cookers; Filming and / or photographing machine; Fixed line telephone box; Freezer; Gas cookers; Generator; Glacier; Irons electric ironing clothes; Laptop; Microwave oven; Mixed cookers (electric and gas); Mobile Phones; Motorcycles; New motor vehicles; Order number; Printers & Scanners; Radio; Shower / tub combination; Solar panel; Sound equipment; Tables; Televisions; Total purchase value (MT); Used motor vehicles; Wagons for donkey, ox for personal transport; Wall, wrist and pocket watches; Washing machines

- Number of goods owned belonging to the same category;
- Number of goods purchased during the last 12 months;
- Total value of purchase

The survey does not collect information on the vintage of the durable goods owned by the households, nor the current value of durable goods owned and purchased before the 12-months reference period. For this reason, it is impossible to compute any depreciation rate using the survey data, and such depreciation rate must be imputed using data from other sources. In particular, for the first wave of the IOF survey (in 1997), a small market value survey was conducted in the capital city to collect information on the market prices of used durable goods in *good condition*, and their lifespans were estimated based on informal consultations with several members of staff at the Department of Population and Social Development (see Table 29). We are aware that the table has been later updated to be used in more recent survey, but these updates are not documented (to our knowledge).

Table 29. Estimated market value and lifespans of durable goods, 1997

	Estimated market value of a used durable good (thousands MT)	Assumed Remaining lifespan (in years)
Table with four chairs	2,352	15
Medium bed	358	15
Refrigerator	6,638	10
Fan	149	5
Sewing machine	3,876	25
Electrical iron	224	5
Charcoal iron	30	5
Radio	251	5
Black and white TV	1,700	5
Color TV	3,506	5
Air conditioner	5,665	10
Clock	72	5
Telephone	519	10
Vehicle (car of truck)	125,029	15
Motorcycle	13,892	10
Bicycle	795	10

Source: Datt and others (2000), p. 108, Table 21

The pattern of purchases and stock of durables owned shows inconsistencies across quarters which are difficult to interpret. Most saliently, the reported number of owned items halves when moving from Q1 to the later quarters of the survey, while we would expect it to be stable over time, given it is a measure of a stock. As shown in Table 30, Maputo city is the province with the highest reported number of owned durable goods: but the number of durable goods owned by the average household drops from 26 in Q1 to 9 in Q2 to 8 in Q4. The same pattern is followed in the other provinces.

Table 30. Average number of owned durable goods, by quarter and province

	Q1	Q2	Q4
Cabo Delgado	10.33	4.39	4.33
Gaza	17.37	6.31	6.21
Inhambane	15.41	6.87	6.93
Manica	11.48	4.78	4.78
Maputo City	25.80	8.51	8.35
Maputo Province	19.01	7.43	7.41

Nampula	6.66	4.40	4.36
Niassa	6.72	4.04	3.91
Sofala	13.55	5.79	5.75
Tete	9.72	4.10	4.10
Zambezia	7.36	4.64	4.34
Total	12.63	5.71	5.60

On the other hand, as shown in Table 31, the number of purchased goods in Q2 and Q4 is about double than in Q1, which might be reasonable given that Q1 corresponds to the dry season (months AUG-SEP-OCT), while Q2 (months NOV-DEC-JAN) and Q4 (months MAY-JUN-JUL) corresponds to the rainy season and the harvesting season, which might be more conducive to large expenses given the money inflows from crops.

Table 31. Average number of purchased durable goods in the last 12 months, by quarter and province

	Q1	Q2	Q4
Cabo Delgado	1.18	3.26	3.20
Gaza	1.93	3.88	3.70
Inhambane	1.76	3.94	3.83
Manica	1.84	3.32	3.24
Maputo City	2.67	4.73	4.58
Maputo Province	2.63	4.60	4.44
Nampula	1.39	3.36	3.28
Niassa	1.64	3.56	3.33
Sofala	1.58	3.64	3.56
Tete	1.28	2.90	2.81
Zambezia	1.83	5.23	4.70
Total	1.79	3.91	3.77

Since the advice from INE was to collect information on durables only in Q1, we checked the pattern of ownership and purchase of durable goods by households' number of recurrences in the survey. Table 32 summarizes the results for the stock of available durable goods: overall, the majority of households (or 57 percent) report ownership of durable goods only in Q1. Another 41 percent replies to the question about durable ownership in all three quarters, and for this set of households, as reported above, the average number in Q1 is about three times higher than in Q2 or Q4. Households reporting ownership of durables only in Q1, have, on average, a lower number of durables than households being interviewed three times report for Q1. Information collected in Q1 seems to be the most reliable, and we recommend to impute it to later quarters.

Table 32. Average number of owned durable goods, by quarter, province and households' frequency of presence in the survey

Province		**Q1 only**	**Q1 and Q2**	**Q1,Q2 and Q4**
Cabo Delgado	Q1	9.0	16.1	12.7
	Q2	-	5.7	4.2
	Q4	-	-	4.2
	Obs.	629	30	272
Gaza	Q1	13.6	24.0	21.3
	Q2	-	10.2	6.2
	Q4	-	-	6.2
	Obs.	419	9	387
Inhambane	Q1	12.2	14.6	19.9
	Q2	-	5.4	7.0

	Q4	-	-	7.0
	Obs.	479	21	343
Manica	Q1	8.8	12.3	13.9
	Q2	-	3.6	4.9
	Q4	-	-	4.9
	Obs.	395	28	443
Maputo Cidade	Q1	24.6	31.2	26.4
	Q2	-	9.8	8.4
	Q4	-	-	8.4
	Obs.	496	30	528
Maputo Province	Q1	14.6	18.6	22.7
	Q2	-	6.3	7.5
	Q4	-	-	7.5
	Obs.	450	18	554
Nampula	Q1	4.1	8.6	10.5
	Q2	-	4.9	4.4
	Q4	-	-	4.4
	Obs.	875	24	545
Niassa	Q1	4.2	11.7	9.4
	Q2	-	5.6	3.9
	Q4	-	-	3.9
	Obs.	459	30	333
Sofala	Q1	11.1	-	16.8
	Q2	-	-	5.8
	Q4	-	-	5.8
	Obs.	554	0	428
Tete	Q1	7.7	10.0	13.0
	Q2	-	2.8	4.1
	Q4	-	-	4.1
	Obs.	589	12	357
Zambezia	Q1	5.4	10.8	11.9
	Q2	-	4.4	4.7
	Q4	-	-	4.7
	Obs.	973	52	378

Note: No household reporting ownership of durable goods belongs to the categories Q2 only or Q4 only.

2.2. Housing

Section 4 of the household questionnaire collects information on dwelling characteristics, including current rent paid by tenants and self-assessed rent for homeowners and individuals living for free in ceded dwellings. Homeowners are asked how much would they charge as rent, if they were to lend the house where they are living and individuals living for free are asked how much they think they would pay as rent if they were to pay for the dwelling. Information related to this section of the questionnaire is found in three different sets of data: one containing the effective rent, one the (not better defined) imputed rent, and a third one containing all other information on dwelling characteristics (namely, source of drinking water, distance to basic services, kind of sewerage system, source of energy, number of rooms, principal material used for roofing, floors, and walls, internet and computer usage), which have been collected only in Q1..

We were able to check what definition was used to generate the *imputed rent* files, thanks to a dataset included in the INE raw datasets containing information on section 4 of the household questionnaire collected in the first quarter of the survey (*base de habitação_i trimester.dta*). By merging this file with the effective and imputed rent MEF files, we were able to assess that the effective and imputed rent values in the MEF files are in fact coming from the same section of the questionnaire, and that the *imputed rent* is in fact the self-assessed rent for homeowners and individuals living for free (respectively, questions af31b1 and af31b2).

Of the 33,192 households included in the final file for the poverty analysis, 807 (or 2.4 percent) have no information on the rental value of the dwelling (in particular, 10 households interviewed in Q1, 68 households interviewed in Q2 and 729 households interviewed in Q4).

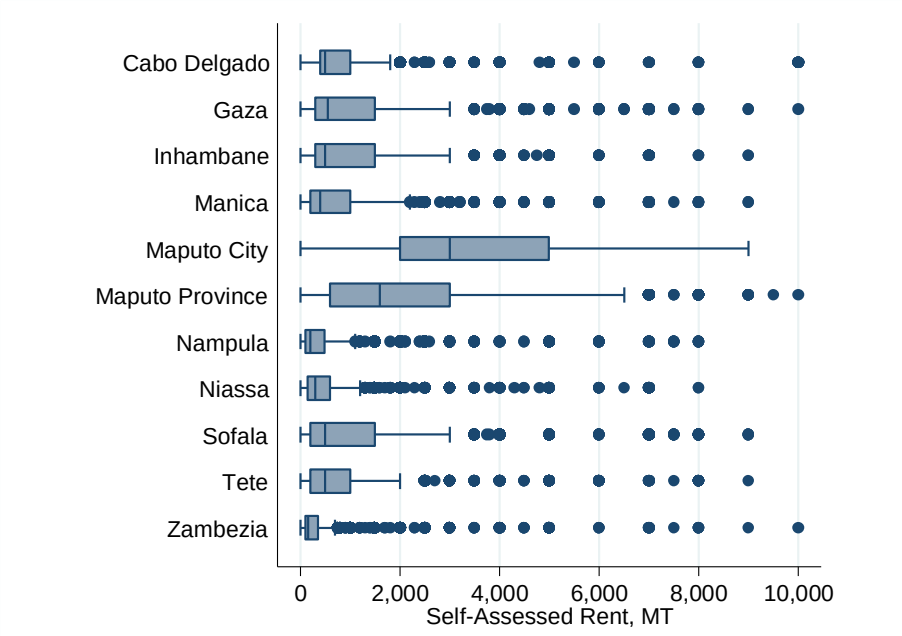
As expected, tenants are a small minority of households, accounting for only 5 percent of the total observations. Sofala and Maputo City are the two provinces with the higher share of tenants (13.11 and 12.15, respectively), while Niassa and Ihambane are the two provinces with the lowest share of tenants (1.19 and 1.78 respectively).

Table 33. Share of homeowners and tenants, by province

Province	Homeowners	Tenants
Cabo Delgado	97.84	2.16
Gaza	97.51	2.49
Inhambane	98.22	1.78
Manica	94.21	5.79
Maputo Cidade	87.85	12.15
Maputo Province	94.3	5.7
Nampula	97.46	2.54
Niassa	98.81	1.19
Sofala	86.89	13.11
Tete	93.46	6.54
Zambezia	96.46	3.54
Overall	94.77	5.23

As summarized in Figure 17, Maputo City is the province with the higher average self-assessed rental value, which can be due to better quality of the dwellings, or a larger size, or be indicative of price differences among provinces. Not being able to control for dwelling characteristics, the reason of this price differential is difficult to assess, and we can assume that it is due to a combination of the aforementioned factors.

Figure 17. Self-Assessed rental value, by province



Over the three quarters, a subset of households changes its status from tenant to homeowner and vice versa. If we restrict the sample on the set of households who have been interviewed over three quarters, and who have remained homeowners all the time (about 80 percent of the total observations), average rental values are pretty stable over the three quarters, with some salient exceptions (see Table 34). In Niassa, for instance, the average self-assessed rental values in Q1 is 1,357 MT, 938 in Q2 and just 682 in Q4.

Table 34. Average self-assessed rental value for homeowner-households who have been interviewed in the three quarters, by province

Province	Q1	Q2	Q4	Obs.
Cabo Delgado	1,152.27	1,115.37	1,332.10	742
Gaza	1,706.11	1,369.52	1,489.59	739
Inhambane	1,862.73	1,482.66	1,855.40	756
Manica	1,280.07	1,176.06	1,118.43	759
Maputo City	7,409.58	8,221.88	7,584.35	801
Maputo Province	3,568.60	3,481.92	3,524.88	902
Nampula	848.85	656.02	667.43	1,247
Niassa	1,357.34	937.92	682.18	715
Sofala	1,861.04	1,718.95	1,837.48	819
Tete	1,430.94	1,311.67	1,311.27	787
Zambezia	567.63	510.52	545.78	852

The large variation in Niassa across quarters, does not seem driven by the replies of any specific group of households (as defined by the frequency of their presence in the survey), and the overwhelming majority of households reporting self-assessed rent have been interviewed in all three quarters.

Table 35. Average self-assessed rental value for homeowner-households, by frequency of presence in the survey, by quarter and by province

Province		Q1 only	Q1 and Q2	Q1, Q2 and Q4
Cabo Delgado	Q1	1,557.8	1,857.4	1,152.3
	Q2		1,581.5	1,115.4
	Q4			1,332.1
	#Obs	58	68	742
Gaza	Q1	608.0	2,082.6	1,706.1
	Q2		3,110.2	1,369.5
	Q4			1,489.6
	#Obs	6	29	739
Inhambane	Q1	775.0	1,056.3	1,862.7
	Q2		1,060.0	1,482.7
	Q4			1,855.4
	#Obs	18	40	756
Manica	Q1	1,736.2	1,188.6	1,280.1
	Q2		970.8	1,176.1
	Q4			1,118.4
	#Obs	13	36	759
Maputo Cidade	Q1	17,328.6	22,514.9	7,409.6
	Q2		21,942.6	8,221.9
	Q4			7,584.4
	#Obs	43	47	801
Maputo Province	Q1	1,411.8	5,101.1	3,568.6
	Q2		3,895.3	3,481.9
	Q4			3,524.9
	#Obs	17	43	902
Nampula	Q1	511.9	671.0	848.9
	Q2		683.5	656.0
	Q4			667.4

	#Obs	60	68	1,247
Niassa	Q1	600.0	1,064.2	1,357.3
	Q2		1,042.6	937.9
	Q4			682.2
	#Obs	12	31	715
Sofala	Q1	4,950.0	2,910.5	1,861.0
	Q2		3,436.8	1,718.9
	Q4			1,837.5
	#Obs	8	19	819
Tete	Q1	1,079.1	1,247.0	1,430.9
	Q2		2,020.8	1,311.7
	Q4			1,311.3
	#Obs	22	25	787
Zambezia	Q1	362.3	489.4	567.6
	Q2		598.1	510.5
	Q4			545.8
	#Obs	120	131	852

Note: households being interviewed only in Q2 and only in Q4 are not shown because for each province less than 10 households belong to each category. No households belong to the category "Q2 and Q4"

Since housing information, according to INE instructions, was supposed to be collected only in Q1, we recommend to impute housing from Q1 to the other two quarters, as with durables.

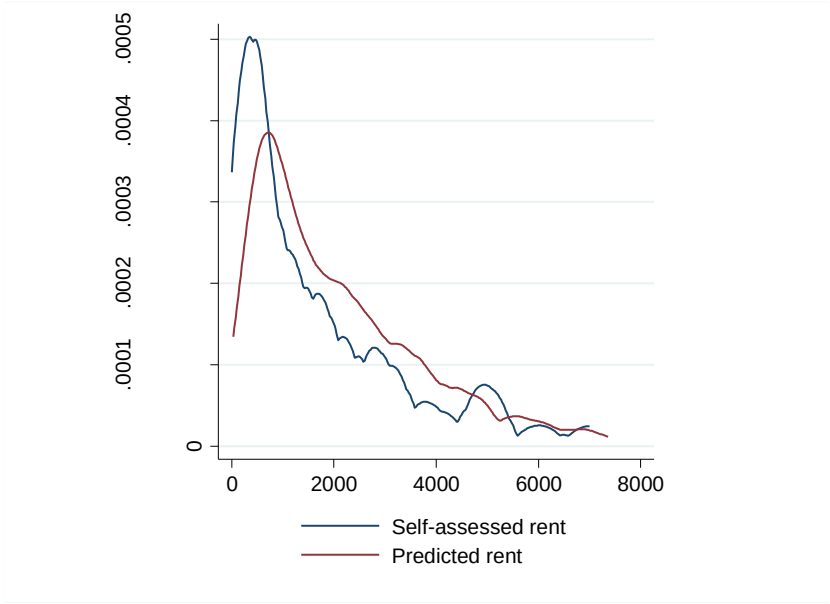
As a check to assess the quality of housing data, we run a hedonic model on the reported rent by tenant, and we use it to predict imputed rents for owners. We restrict the analysis on household living in urban settlement. The model is the following:

$$\ln \mathrm{r}_h = \alpha_0 + \sum_{m=1}^{M} X_{hm}\beta_{hm} + \varepsilon_h,$$

where independent variables X_{hm} include all dwelling characteristics found in Section 4 of the Roster section of the questionnaire (including source of drinkable water, distance to source of water, source of energy used for cooking, for lighting, number of rooms, roofing and flooring and walls material).

Despite the small number of observations (only 639 households are tenants), the model seems to be well behaved (R2=0.78), and out-of-sample estimates of self-assessed value for home-owners are well predicted to a visual enquire, as summarized in Figure 18. We are therefore confident that we can use the self-assessed values as good proxy for the value of services from dwelling.

Figure 18. Self-assessed rent and predicted rent for owners living in urban settlements, Q1.



2.3. Other non-food items

Information on non-food items (other than durables and housing) are found in different sections of the questionnaire. Most prominently, the section collecting information on purchases in the month before the interview collects quantity, values, place of acquisition for more than 600 different items. The diary of purchases and the auto-consumption sections collect information on a handful of non-food items (water and electricity consumption, liquid and solid fuel and disposable diapers). The roster collects information on expenditure in education (fees and gratuities, school books, uniforms, school transport). The employment questionnaire, finally, contains a section dedicated to tourism, where are collected expenses related to transport, accommodation, recreations, cultural services, purchases, medical expenses borne by the household when travelling for turism.

2.3.1. Weekly expenses (from diary and auto-consumption)

Non-food items collected in the diary belong mainly to two categories: Housing, water, electricity, gas and other fuels (coicop 0441, 0451, 0453, 0454) and personal product (coicop 1213, which refer more precisely to disposable diapers for babies). The distribution of reported purchases is summarized in Table 36, which shows that reported expenses mainly refers to solid fuel (wood and charcoal), followed by water and utilities. Few observations are listed under the category "Bread and cereals", but refers to grinding services.

Table 36. Distribution of non-food consumption from diary, by quarter

COICOP	Description	Q1	Q2	Q3
0111	Bread and cereals[1]	2.33	2.34	1.66
0451	Electricity	16.54	14.89	14.72
0453	Liquid fuel	6.90	7.03	4.92
1213	Personal Product	4.16	3.74	3.00
0454	Solid Fuel	53.22	58.48	54.68
0441	Water	16.85	13.52	21.02
		4,594	3,372	3,967

Note: Observations referring to grinding services.

All non-food expenses reported in the auto consumption module belong to the category "Solid Fuel" (with few observations referring to grinding services -11 observations- and water -20 observations-).

There are 5,152 reported instances in Q1, 4,762 in Q2 and 5,313 in Q4, for a total of 15,244 households overall.

2.3.2. Monthly expenses

The section of the questionnaire containing households' monthly expenditures is incredibly detailed. The questionnaire contains a list of 619 items, reaching coicop-8 level of detail. As an example, under the title "Clothing and Footware" (coicop2 "03"), we find coicop8 code "03121501" which corresponds to "used t-shirts or shirts for men". Given such level of detail, we can attempt computing unit values for non-food items, which is valuable information for the construction of a spatial deflator.

Table 37. Share of non-food items purchased by households in the last 30 days before the interview, by higher level of coicop classification, by quarter

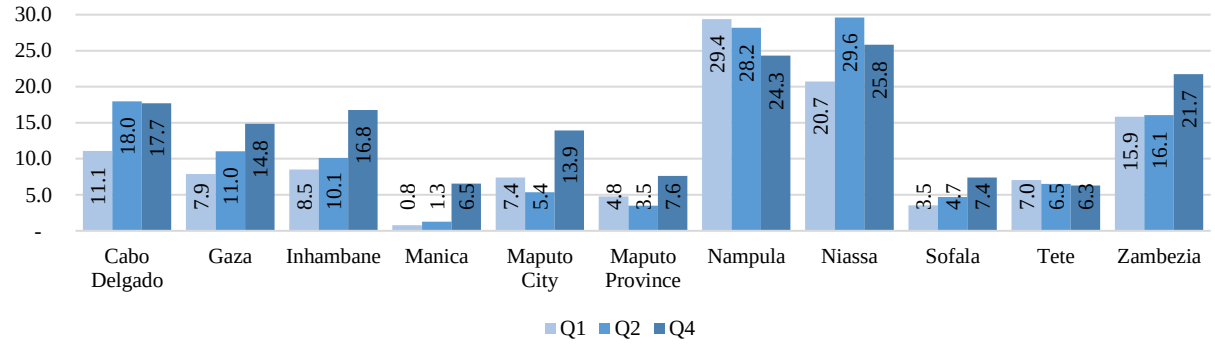
COICOP	Description	Q1	Q2	Q3
01	Food and non-alcoholic beverages[1]	0.10	0.02	-
03	Clothing and footwear	29.09	26.14	25.73
04	Housing, water, electricity, gas and other fuels	2.69	2.93	2.81
05	Furnishings, household equipment and routine household maintenance	27.44	29.52	29.78
06	Health	12.03	9.43	8.44
07	Transport	0.69	0.45	0.56
08	Communication	0.19	0.19	0.13
09	Recreation and culture	3.55	4.00	4.60
10	Education	0.06	0.04	0.05
11	Restaurants and hotels	0.10	0.00	0.01
12	Miscellaneous goods and services	24.05	27.28	27.91
	Total	83,753	66,755	74,839

[1] These are 89 observations referring to grinding services. Although they have been registered as "food", these are to be considered services related to food.

As summarized in Table 37, Clothing and footwear, household furnishing and maintenance, miscellaneous goods and services occupy the largest share of total monthly expenditures.

In a subset of provinces (particularly Niassa, Nampula, Zambezia), a sizable share of households does not report any non-food consumption in the recall section of the questionnaire, as summarized in Figure 19.

Figure 19. Share of households not reporting any non-food consumption in the recall section, by quarter and province



2.3.3. Education expenses (from roster)

Notwithstanding few education expense collected in the monthly recall section of the questionnaire, the main batch of information with respect to education spending is collected in Section 2 of the household questionnaire. Two set of files seem to report such information: the roster files (base_de_af), and the education files (despesas_de_educa). Since the second set of files seems to duplicate information of the

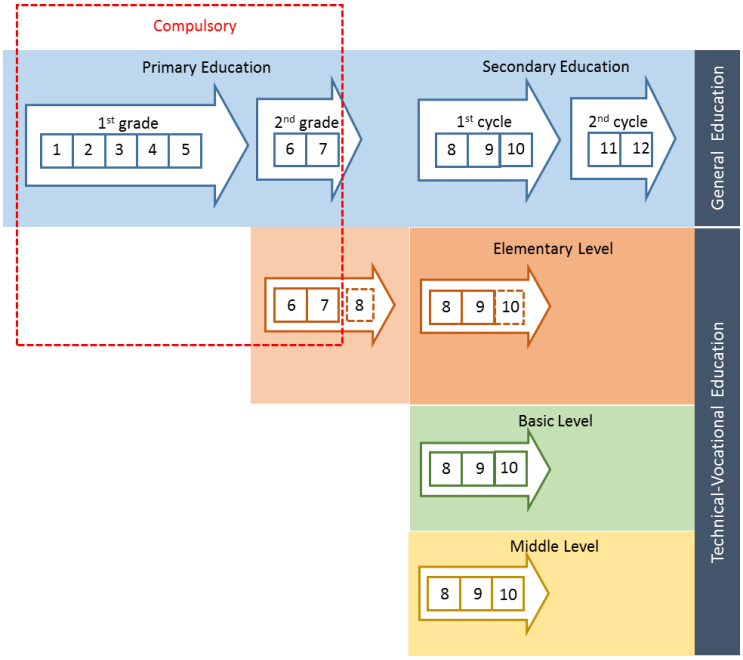
first set, but with a lower level of disaggregation (in particular, spending is divided into public/private schools), we analyze here the files denominated "depesas_de_educa" reporting spending in education in the 12 months before the survey.

Box 3. Education System in Mozambique

The education system in Mozambique comprises three sub-systems: pre-scholar, scholar and extra-scholar. The scholar year starts in January and finishes at the end of October, for a total of about 220 school days.

Pre-school education is coordinated by the Ministry of Women and Social Action (MWSA) and covers children from 0 to 2 years old (day-care centers) and between 2 and 5 years of age (kindergartens). The facilities may be managed by the MWSA itself, non-governmental or community-based organizations or the private sector. Frequency is optional.

School education comprises i) General Education, ii) Technical-Vocational Education and iii) Higher Education. General Education is in turn divided into primary (first and second grade) and secondary (first and second cycle) education. Attendance of seven years of schooling is mandatory. The technical-vocational education is in turn divided into elementary, basic and middle levels. Basic and Middle levels may follow an industrial, commercial or agrarian curriculum.



Extra-school education encompasses literacy and cultural and scientific upgrading activities carried out outside the regular school system.

Source: Author elaboration from the website of the Mozambique Ministry of Education and Human Development (http://www.mec.gov.mz)

As summarized in Table 38, school clothing is the most frequent spending, followed by enrollment fees and gratuities related to the 1st cycle of public secondary school, followed by schoolbooks and transport costs.

Table 38. Distribution of Education Spending, by quarter and code

coicop code		description	Q1	Q2	Q4
31291	Clothing		41.87	41.71	41.84
73205	Transport		6.73	6.89	6.73
95101	Schoolbooks		8.94	8.83	8.79
101021	Primary School	1st grade, Private	1.35	1.36	1.32
101022		1st grade, Public	2.54	2.64	2.59
102011		2nd grade, Private	0.61	0.59	0.57
102012		2nd grade Public	2.16	2.18	2.19
102021	Secondaty School	1st cycle, Private	1.91	1.94	1.92
102022		1st cycle, Public	19.58	19.63	19.75
102031		2nd cycle, Private	0.81	0.84	0.83
102032		2nd cycle, Public	7.53	7.44	7.56
102041	Vocational Education	Elementary, Private	0.01	0.01	0.01
102042		Elementary, Public	0.07	0.08	0.05
102043		Basic, Private	0.09	0.09	0.1
102044		Basic, Public	0.61	0.62	0.64
102045		Middle, Private	0.31	0.34	0.31
102046		Middle, Public	0.73	0.71	0.75
104001	Higher Education	Private	1.5	1.49	1.45
104002		Public	2.56	2.5	2.48
101040	Literacy Program		0.04	0.04	0.04

About 45 percent of households report school-related spending int he survey.

2.3.4. Expenses related to tourism

The employment questionnaire contains a section (section 5) on tourism, reporting spending for transport (by plane, boat, road), accommodation, restaurant services, recreation, cultural services, touristic guides and health expenditure.

About 2 percent of households report some spending related to tourism (0.7 percent in Q1, 2.8 percent in Q2 and 2.4 percent in Q4).

1.1.1. Insurance Expenses

The survey collects information also on the expenses related to insurance service's premium for a total of 829 occurrences. Of the total observations, 62 percent refer to insurances related to means of transport, 22 percent to life insurance, 10 percent to health insurance and 6 percent to housing' insurance. More than half of the observations refer to households living in Maputo (province or city).

2. Consumption Aggregate

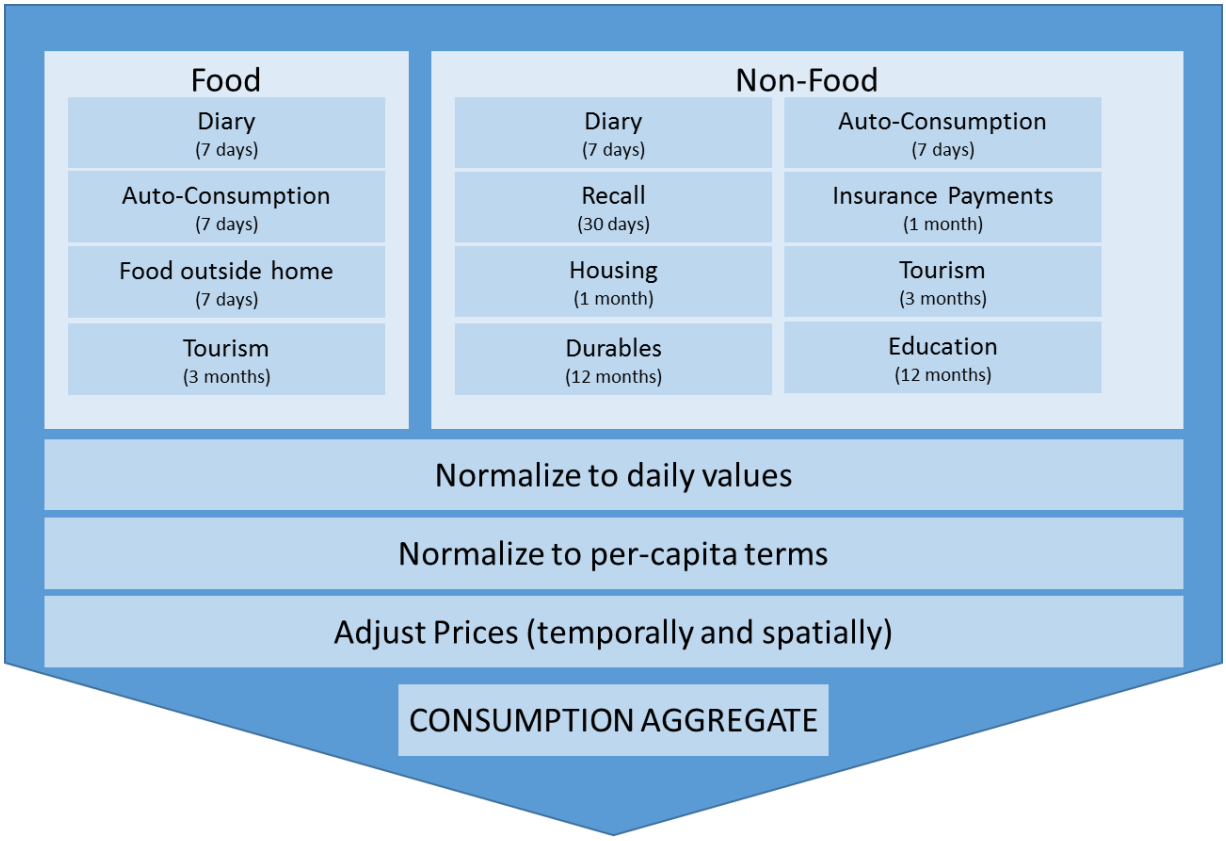
The consumption aggregate is the sum of food and non-food consumption, expressed in daily values and per capita terms (see Figure 20).

Given the results of this data assessment, we feel the following adjustment should be made prior the construction of the consumption aggregate:

- Nuclear Households in Q4 recorded with missing information in the roster: impute roster information from Q1 or drop observations and re-weight. Given that this set of observations have other issues (for instance, almost all households with zero food consumption are found among this group), we believe it is better to drop the observations.

- Households with zero food consumption: keeping in mind that most of those households belong to the set with all-missing roster information in Q4, food consumption may be imputed using the median Engel shares in the same PSU (or at higher level of disaggregation).
- Housing: since information on dwelling characteristics and rents were supposed to be collected only in Q1, impute Q1 values to Q2 and Q4.
- Durables: since information on dwelling characteristics and rents were supposed to be collected only in Q1, impute Q1 values to Q2 and Q4. Moreover, to overcome missing vintage and prices of owned durable goods, use 1997 used durables price survey, updated to current prices using consumers price index.

Figure 20. Synopsis of components and steps for building the Consumption Aggregate



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Annex 1. Short Files Description (files used by MEF to construct official consumption aggregate and poverty line)

File	Questionnaire Section	Description
base_de_af (i, ii, iv)	QAF Section 1 – Demographic and Social characteristics Section 2 – Education Section 3 – Heath Status	Household Roster
base_do_af_finalissima_ponderada.dta (i)	QAF Section 1 – Demographic and Social characteristics Section 2 – Education Section 3 – Heath Status	Household Roster The difference between this file and base_de_af is not clear. We will be using the file base_de_af which appears to be more recent.
despesas_de_educa (i, ii, iv)	Page 32 of the annual expenditures questionnaire (Q_Despesas_Anuais_Mensais_Receitas.pdf)	Expenditure on education (larger set than data found in base_de_af, with overlap)
habita_o_i_trimestre.dta	QAF Section 4 – Dwelling characteristics	Characteristics of the dwelling, including self-assessed rent
base_de_rendas_efectivas (i*, ii, iv)	QAF Section 4 – Dwelling characteristics	Same information as file habita_o_i_trimestre.dta for tenants (variable af31a)
base_de_rendas_imputadas (i, ii, iv)	QAF Section 4 – Dwelling characteristics	Same information as file habita_o_i_trimestre.dta for home owners (variable af31b1 and af31b2)
base_de_indicadores_de_pobreza_i_trimestre _05032016.dta	QAF Section 6 – Poverty Indicators	Household issues in having an adequate alimentation (with reference period last 12 months). From MEF we only received Q1. But from NSO we also have Q2 and Q4
base_de_antropometria_01032016.dta	QAF Section 8 – Weight and Height of children age five or less	Children anthropometric information – height, weight, availability of mosquito net
base_emprego (i, ii, iv)	Employment Questionnaire Section 1 – Employment and working hours	Status in employment for individuals age 5 and more, and hours worked
base_de_receitas (i*, ii*, iv*)	Employment Questionnaire Section 2 – Payments received	Value of monetary and in kind payments received in the last month
base_de_transfer_ncias (i*, ii*, iv*)	Employment Questionnaire Section 3 – Transfers	Transfers paid and received and Xitique (informal insurance scheme) received
despesas_individuais (i, ii, iv)	Employment Questionnaire Section 4 – Individual Expenditures	Individual expenditure on transport, fuel, tobacco, communication, food and drinks outside home
base_de_despesas_no_estrangeiro (i, ii, iv)	Employment Questionnaire Section 5 – Turism Information	Expenditure linked to travel
dd (i, ii, iv)	DAS (Daily Expenditures of household), 5_Quest_Despesas_Diárias_Agregado_Familiar_VF	Diary Expenditure files collect information on the daily consumption of the household over a period of one week.
ac (i, ii, iv)	DAS (Daily Expenditures of household), 5_Quest_Despesas_Diárias_Agregado_Familiar_VF	Diary Expenditure files collect information on the daily auto-consumption of the household over a period of one week.
refeicoes (i, ii, iv)	DAS (Daily Expenditures of household), 5_Quest_Despesas_Diárias_Agregado_Familiar_VF	Detailed description of meals

dm (i, ii, iv)	DAS (Annual and Monthly Expenditures, including monetary transfers) 3_Q_Despesas_Anuais_Mensais_Receitas.pdf	Expenditure for non-food goods and services, and transfers made
base_bens_dur_veis (i*, ii, iv)	DAS (Annual and Monthly Expenditures, including monetary transfers) 3_Q_Despesas_Anuais_Mensais_Receitas.pdf	Durable Goods files include for each *hh* a list of about 30 durable goods, with information on the total number owned, the number purchased during the reference period, and the total value
base_de_posse_de_terra (i, ii, iv)	DAS (Annual and Monthly Expenditures, including monetary transfers) 3_Q_Despesas_Anuais_Mensais_Receitas.pdf	Land ownership, livestock and production equipment
base_de_seguros (i, ii, iv)	DAS (Annual and Monthly Expenditures, including monetary transfers) 3_Q_Despesas_Anuais_Mensais_Receitas.pdf	Expenditure for insurance services (life, home, health, transport-related)
IOF_ponderadores_pontuais_despesas_final.dta		
ponderadores (i, ii, iv)		
preco_comunitario_1	Community Questionnaire	Prices of goods in nearby markets

Annex 2. Weighted population and population growth between quarters, sample of first 50 PSU.

	Total Population			Growth Rate	
PSU	Q1	Q2	Q4	$\frac{Q2-Q1}{Q1}*100$	$\frac{Q4-Q1}{Q1}*100$
1	6292.031	6292.641	6899.21	0.0096948	9.6499683
2	10725.05	10940.62	11473.19	2.0099673	6.9756318
3	7436.037	7551.17	8077.124	1.5483113	8.621353
4	9438.046	9915.677	10264.68	5.0606979	8.758529
5	11011.05	10453.07	12452.23	-5.067455	13.088488
6	8437.041	8366.354	9255.037	-0.8378174	9.6952948
7	10439.05	10609.08	11167.23	1.6287881	6.975539
8	9009.044	10940.62	9044.697	21.44041	0.3957468
9	13442.07	11498.37	14379.73	-14.459826	6.9755625
10	10439.05	11326.75	11473.18	8.5036474	9.9063612
11	7293.036	7722.788	8624.014	5.8926351	18.249985
12	7550.434	7551.17	8600.643	0.0097478	13.909253
13	6149.03	6864.7	7104.879	11.638746	15.544712
14	8494.238	6708.684	8834.355	-21.020767	4.0040908
15	8723.043	9204.938	8834.355	5.524391	1.2760685
16	9009.044	9610.58	9423.311	6.6770237	4.5983458
17	8723.043	10297.05	9331.524	18.044242	6.9755589
18	8294.041	7644.779	9909.437	-7.8280539	19.476586
19	7007.034	8008.816	8600.643	14.296805	22.742989
20	7078.532	6552.668	6170.027	-7.428998	-12.834653
21	8294.041	8580.874	8872.596	3.4583022	6.9755503
22	8151.04	7020.715	8413.67	-13.867249	3.2220428
23	6149.03	6240.636	6730.936	1.4897634	9.4633788
24	12802.74	11842.42	13100.34	-7.5008943	2.3245024
25	16977.55	17071.98	19650.51	0.5562051	15.744086
26	14472.67	13057.03	15482.22	-9.7814709	6.9755615
27	14472.67	16700.85	15647.63	15.395777	8.1184743
28	16977.55	17368.89	20014.41	2.305044	17.887504
29	18369.15	17915.46	20633.04	-2.4698475	12.324413
30	21987.32	23077.54	23521.06	4.9584033	6.9755659
31	16981.66	19066.34	19535	12.276067	15.035868
32	16981.66	0	17486.97	-100	2.9756219
33	17899.58	18596.72	18432.22	3.8947283	2.9757123
34	16063.73	16342.58	16541.73	1.7358982	2.9756476
35	22489.22	22189.27	21267.94	-1.3337501	-5.4305129
36	24784.04	34516.64	25521.53	39.269627	2.975665
37	21112.33	23105.02	21740.56	9.4385129	2.9756545
38	14686.84	16567.99	15123.87	12.808405	2.9756571
39	16522.69	16342.58	17014.35	-1.0900767	2.9756656
40	21112.33	21414.41	21740.56	1.4308227	2.9756545
41	31316.43	30492.17	33500.93	-2.6320369	6.9755716
42	31316.43	33522.05	20859.07	7.0430122	-33.392567
43	23407.15	25640.94	24103.67	9.5431951	2.975672
44	18358.55	17751.42	18904.84	-3.3070695	2.9756707
45	22948.19	25359.17	23631.05	10.506188	2.9756595
46	19735.44	20287.34	20795.32	2.796492	5.3704402
47	11015.13	11834.28	13233.39	7.4365895	20.138301
48	16522.69	23668.56	17014.35	43.248829	2.9756656
49	18817.51	19723.8	19377.46	4.8162058	2.9756859
50	23407.15	23175.46	24103.67	-0.9898258	2.975672

Annex 3. Average households' food purchase pattern (items in each class of product as a share of total items purchased), by quarter, by province

Cabo Delgado	Q1	Q2	Q4	Total
Beer	0.04	0.01	0.01	0.02
Bread and Cereals	15.06	16.25	13.44	14.91
Coffee, tea and cocoa	0.16	0.22	0.09	0.16
Fish and seafood	13.33	13.15	13.67	13.38
Food products n.e.c	8.73	11.58	9.82	9.98
Fruit	6.41	7.53	6.54	6.8
Meat	2.53	2.05	1.87	2.17
Milk, cheese and eggs	0.46	0.43	0.27	0.39
Mineral waters, soft drinks, juices	0.64	0.51	0.36	0.51
Oils and fats	14.1	17.97	16.34	16.03
Spirits	0.08	0.18	0.1	0.12
Sugar, jam, honey, pastries	2.45	2.15	2.24	2.29
Vegetables	35.98	27.92	35.21	33.21
Wine	0.03	0.04	0.04	0.04
Total	100	100	100	100

Gaza	Q1	Q2	Q4	Total
Beer	0.08	0.11	0.13	0.11
Bread and Cereals	26.11	36.09	28.77	29.83
Coffee, tea and cocoa	0.47	0.31	0.22	0.34
Fish and seafood	7.28	9.63	8.58	8.38
Food products n.e.c	7.95	6.85	6.35	7.12
Fruit	4.7	4.58	3.6	4.31
Meat	2.94	3.41	3.11	3.13
Milk, cheese and eggs	0.69	1.14	0.58	0.78
Mineral waters, soft drinks, juices	1.18	1.56	0.79	1.16
Oils and fats	3.34	2.5	2.51	2.83
Spirits	0.04	0.06	0	0.03
Sugar, jam, honey, pastries	2.43	1.88	1.71	2.04
Vegetables	42.69	31.75	43.46	39.8
Wine	0.1	0.11	0.2	0.14
Total	100	100	100	100

Inhambane	Q1	Q2	Q4	Total
Beer	0.05	0.07	0.06	0.06
Bread and Cereals	23.27	28.15	26.21	25.72
Coffee, tea and cocoa	0.8	0.75	1.03	0.85
Fish and seafood	9.29	10.69	10.53	10.12
Food products n.e.c	10.12	9.19	8.81	9.42
Fruit	12.06	15.08	11.2	12.76
Meat	1.32	1.64	1.16	1.37
Milk, cheese and eggs	0.98	1.25	0.87	1.03
Mineral waters, soft drinks, juices	0.71	1.46	0.37	0.84
Oils and fats	3.17	2.84	2.74	2.94
Spirits	0.21	0.12	0.03	0.13
Sugar, jam, honey, pastries	2.76	2.4	2.56	2.59
Vegetables	35.07	26.19	34.38	32.04
Wine	0.18	0.16	0.04	0.13
Total	100	100	100	100

Manica	Q1	Q2	Q4	Total
Beer	0.07	0.07	0.05	0.06
Bread and Cereals	10.74	12.84	9.63	11.02
Coffee, tea and cocoa	0.3	0.15	0.15	0.21
Fish and seafood	9.73	12.22	10.69	10.8
Food products n.e.c	11.81	12.07	11.9	11.92
Fruit	3.03	3.21	3.93	3.38
Meat	2.27	2.75	2.48	2.49
Milk, cheese and eggs	1.19	1.09	0.74	1.02
Mineral waters, soft drinks, juices	1.1	1.23	0.79	1.04
Oils and fats	8.84	8.62	8.2	8.57
Spirits	0.08	0.07	0.07	0.08
Sugar, jam, honey, pastries	3.12	3.26	2.57	2.98
Vegetables	47.67	42.38	48.76	46.41
Wine	0.04	0.04	0.02	0.04
Total	100	100	100	100

Maputo City	Q1	Q2	Q4	Total
Beer	0.13	0.21	0.07	0.14
Bread and Cereals	25	26.38	26.19	25.83
Coffee, tea and cocoa	0.47	0.28	0.23	0.33
Fish and seafood	4.97	4.78	4.42	4.73
Food products n.e.c	5.54	5.69	5.85	5.69
Fruit	11.83	11.8	11.72	11.79
Meat	4.27	4.35	3.82	4.15
Milk, cheese and eggs	2.48	2.61	2.3	2.46
Mineral waters, soft drinks, juices	1.38	1.52	1.05	1.32
Oils and fats	2.29	1.97	1.68	1.99
Spirits	0.04	0.02	0.02	0.03
Sugar, jam, honey, pastries	1.26	1.14	1.04	1.15
Vegetables	40.21	39.13	41.57	40.3
Wine	0.13	0.11	0.04	0.1
Total	100	100	100	100

Maputo Province	Q1	Q2	Q4	Total
Beer	0.19	0.26	0.09	0.18
Bread and Cereals	24.67	28.84	26.96	26.69
Coffee, tea and cocoa	0.4	0.32	0.28	0.33
Fish and seafood	5.58	5.8	5.41	5.59
Food products n.e.c	6.72	6.3	5.69	6.25
Fruit	10.64	11.39	10.32	10.76
Meat	3.44	4.12	3.99	3.82
Milk, cheese and eggs	1.71	1.99	1.76	1.81
Mineral waters, soft drinks, juices	1.22	1.51	0.86	1.19
Oils and fats	2.74	2.32	1.71	2.27
Spirits	0.1	0.1	0.04	0.08
Sugar, jam, honey, pastries	1.62	1.17	1.13	1.32
Vegetables	40.85	35.75	41.62	39.57
Wine	0.13	0.13	0.15	0.14
Total	100	100	100	100

Nampula	Q1	Q2	Q4	Total
Beer	0.04	0.05	0.09	0.06
Bread and Cereals	16.29	20.37	17.73	17.99
Coffee, tea and cocoa	0.47	0.14	0.09	0.24
Fish and seafood	22.11	25.61	21.82	23.06
Food products n.e.c	3.48	3.21	3.96	3.56
Fruit	3.99	5.52	7.26	5.56
Meat	1.95	2.08	1.8	1.94
Milk, cheese and eggs	1.16	0.84	0.8	0.94
Mineral waters, soft drinks, juices	1.9	2.83	1.84	2.16
Oils and fats	10.32	11.2	9.78	10.4
Spirits	0.11	0.12	0.14	0.12
Sugar, jam, honey, pastries	4.41	3.5	3.17	3.72
Vegetables	33.65	24.42	31.41	30.14
Wine	0.12	0.11	0.11	0.12
Total	100	100	100	100

Niassa	Q1	Q2	Q4	Total
Beer	0.01	0.02	0.01	0.01
Bread and Cereals	12.39	14.55	12.11	12.91
Coffee, tea and cocoa	0.11	0.16	0.07	0.11
Fish and seafood	16.92	21.31	18.92	18.79
Food products n.e.c	3.63	1.94	2.25	2.71
Fruit	1.58	1.15	1.38	1.39
Meat	2.12	2.96	3.14	2.68
Milk, cheese and eggs	0.92	0.95	0.84	0.9
Mineral waters, soft drinks, juices	0.94	0.74	0.41	0.72
Oils and fats	11.11	12.09	12.53	11.84
Spirits	0.11	0.13	0.11	0.12
Sugar, jam, honey, pastries	2.32	1.86	1.91	2.06
Vegetables	47.71	42.05	46.29	45.67
Wine	0.11	0.08	0.03	0.08
Total	100	100	100	100

Sofala	Q1	Q2	Q4	Total
Beer	0.17	0.15	0.07	0.13
Bread and Cereals	12.69	14.06	12.86	13.18
Coffee, tea and cocoa	0.14	0.06	0.08	0.09
Fish and seafood	11.86	12.34	11.69	11.96
Food products n.e.c	11.11	12.68	12.19	11.97
Fruit	4.25	4.36	4.9	4.51
Meat	1.84	2.21	1.62	1.88
Milk, cheese and eggs	0.94	0.85	0.53	0.77
Mineral waters, soft drinks, juices	1.63	2.26	1.36	1.74
Oils and fats	9.09	7.9	7.92	8.32
Spirits	0.08	0.08	0.09	0.08
Sugar, jam, honey, pastries	1.56	0.91	0.89	1.12
Vegetables	44.53	42.11	45.7	44.15
Wine	0.11	0.06	0.09	0.09
Total	100	100	100	100

Tete	Q1	Q2	Q4	Total
Beer	0.19	0.23	0.05	0.15
Bread and Cereals	12.38	13.83	10.59	12.21
Coffee, tea and cocoa	0.05	0.04	0.04	0.04
Fish and seafood	8.13	9.44	7.6	8.35
Food products n.e.c	6.91	8.65	8.74	8.05
Fruit	1.82	2.57	2.37	2.23
Meat	3.4	3.8	3.31	3.49
Milk, cheese and eggs	0.67	0.75	0.49	0.63
Mineral waters, soft drinks, juices	1.05	2.57	1.1	1.53
Oils and fats	8.54	8.35	10.12	9.01
Spirits	0.26	0.18	0.2	0.21
Sugar, jam, honey, pastries	2.32	2.6	2.48	2.46
Vegetables	54.16	46.88	52.71	51.48
Wine	0.11	0.11	0.22	0.15
Total	100	100	100	100

Zambezia	Q1	Q2	Q4	Total
Beer	0.16	0.25	0.1	0.16
Bread and Cereals	11.07	16.95	13.16	13.26
Coffee, tea and cocoa	0.05	0.01	0.04	0.04
Fish and seafood	28.14	30.85	29.01	29.12
Food products n.e.c	5.83	3.99	5.84	5.36
Fruit	4	3.59	4.47	4.05
Meat	2.09	2.48	1.46	1.98
Milk, cheese and eggs	0.61	0.48	0.44	0.52
Mineral waters, soft drinks, juices	2	3.07	1.6	2.15
Oils and fats	9.95	8.79	9.49	9.5
Spirits	0.26	0.34	0.12	0.23
Sugar, jam, honey, pastries	1.39	1.23	1.37	1.34
Vegetables	34.41	27.9	32.91	32.25
Wine	0.04	0.07	0	0.04
Total	100	100	100	100