Do the Poor Pay More for Food? Evidence from Tanzania

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Introduction

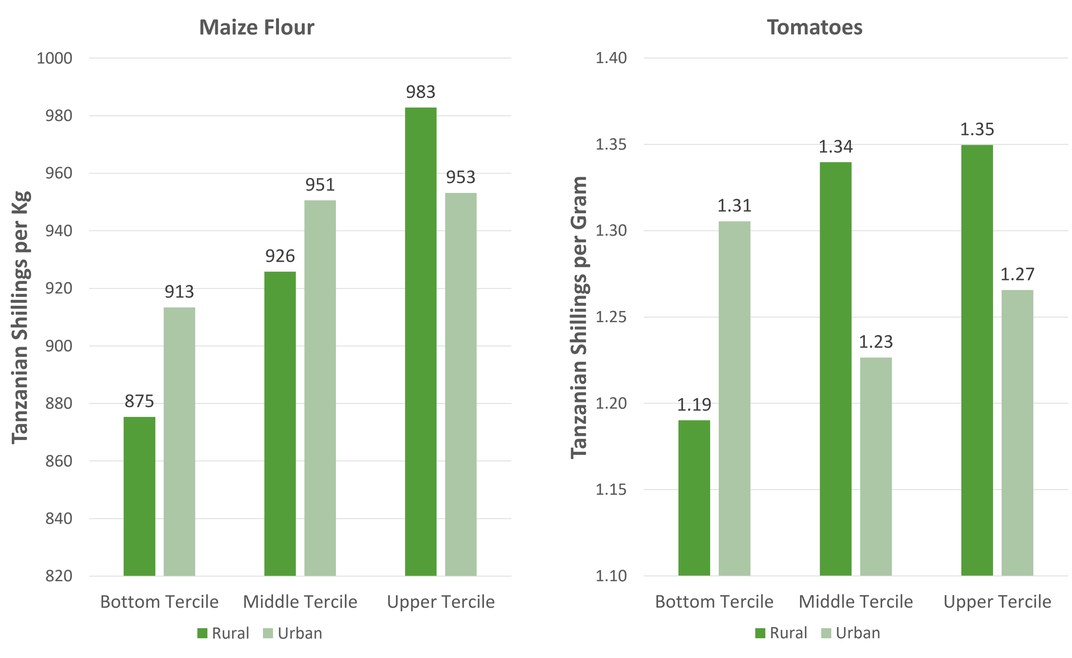
- The subject of whether the **poor pay more** has been a subject of rigorous debate for decades.
- Analysts have used **various identification strategies** to answer the question – predominant of which is to establish the existence of **bulk discounts** and conclude that the poor pay more because they make **several purchases** of **smaller unit sizes.**
- This research adds to the literature by including unique **spatial** and **retail** variables.
- Our research questions are as follows: what are the **patterns** and **determinants** of the **prices** of various staple foods in Tanzania? How do food prices differ over **space**, **city size**, and **retail type**? Is it really the case that "the poor pay more"?

Methods

- We utilize data from the **Household Budget Survey (HBS)**, a cross-sectional, nationally representative survey of 10,186 households conducted between October 2011 and October 2012 in **Tanzania.**
- The HBS included a 28-day **food expenditure diary** in which households were instructed to record all food obtained and the source of the food during the course of the day.
- We also calculate the **distance to the nearest urban** area for each rural village using GPS data obtained from the Tanzanian National Bureau of Statistics.
- Our primary econometric strategy consists of running **hedonic price regressions**, separately by urban and rural households.
- **Regressors** include the natural log of total household expenditure per adult equivalent (our proxy for income) and its square, the quantity purchased, spatial variables (for rural households, the distance to the nearest urban and its square; for urban, the size of the city), the type of retail outlet where the purchase was made, and other household characteristics such as the age and gender of the household head. We also include region, month, and region*month dummies.

Results

Figure 1: Average Price Paid by Rural/Urban Expenditure Terciles



- We first examine some basic **descriptive** statistics. Figure 1 shows the **average price** paid, by total expenditure per adult equivalent **tercile**, for urban and rural households.
- **Maize flour** price is **monotonically increasing** in total expenditure for both the urban and the rural sample.
- The story is less clear with average **tomato price**: it is increasing in total expenditure for the rural sample, but there is no clear relationship in the urban sample.

Table 1: Selected Regression Results

	Rural		Urban	
Dependent Variable: Unit Cost (Price)	Maize Flour	Tomatoes	Maize Flour	Tomatoes
Quantity	-7.497***	-0.000**	-7.501***	-0.000***
Natural Log of Total Expenditure per AE	322.316***	1.187***	295.106***	-0.735
(Natural Log of Total Expenditure per AE)^2	-12.561***	-0.042**	-11.817***	0.036
Average marginal effect	45.450***	0.272***	23.730***	0.087***
Distance (in 100's of km) to nearest urban center	-42.460***	0.401***		
Distance^2	23.012***	-0.121***		
Average marginal effect	-2.872	0.189***		
Secondary city			-14.986	0.215***
Primary city			-43.116***	-0.195***
Number of observations	25,582	44,831	42,968	46,211

Note: *** p<0.01, ** p<0.05, * p<0.10. Maize flour quantity measured in kilograms; tomato quantity measured in grams. Selected coefficients shown. Secondary city defined as having population between 100,000 and 500,000, and primary city defined as having population of 500,000+.

- The **regression** results (Table 1) suggest that, holding all else constant:
  - **Bulk discounts** exist: the quantity purchased negatively and significantly lowers the average price paid in every regression.
  - The **poor actually pay less**: in every regression, the average marginal effect of total expenditure is **negative**.
  - **Distance** to the nearest urban area is a significant correlate of product price only in the tomato regression.
  - **Primary city** residents pay significantly less for both maize flour and tomatoes.

Conclusions and Future Work

- Our work adds to the literature that ponders the question "do the poor pay more?"
- Our initial results suggest that, even after controlling for several spatial and household variables, the poor pay **less** than the rich for such staple foods as maize flour and tomatoes. Further analysis will be done to understand if the poor are taking advantage of the apparent bulk discounts that exist.
- Other research is underway that asks the same question – do the poor pay more? – using both **retail** and **consumer** data collected by the authors in Tanzania. The retail data include such characteristics as the brand, packaging, and origin of the product, which will allow us to partially control for product quality.

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