How do transport costs affect price dispersion of nutrient-dense foods across markets in Malawi?

Stevier Kaiyatsa[1], Nicolas Van de Sijpe[1], and Bhavani Shankar[1]
[1]The University of Sheffield, UK

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Introduction

- Cost of healthy diets is high around the world as shown by recent literature.
- The 2007 – 2008 oil price shock increased transport costs, costs of nutritious foods, and reduced the affordability of healthy diets in most countries.
  - This was aggravated by the removal of fuel subsidies in some countries after the crisis.
- However, there is little research that systematically look at the implications of fuel price changes on food affordability and nutrition.
  - Thus, transport costs as a driver of regional variation in food affordability is underexplored.
- We examine how transport costs affect spatial or regional inequalities in affordability of nutrient-dense foods across markets in Malawi.

Methods

- We adopt Aker's estimation procedure to examine short run impacts of transport costs on price dispersion of nutrient-dense foods across markets (Aker, 2010b, 2010a; Aker et al., 2014).
- We specify our model for market-pair, x and y, at time t as follows:

$$P_{xy,t} = \delta_0 + \gamma_1(dist_{xy})fuel_t + \sum_{j=1}^{3} \sigma_j (dist_{xy})t^j + \omega_1 X_{xy,t} + \lambda_m + \tau_t + \theta_{xy} + \varepsilon_{xy,t} \quad (1)$$

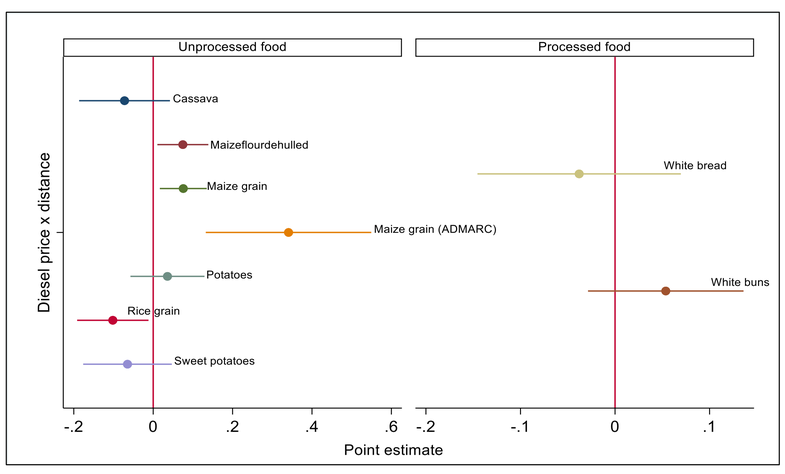
- where $P_{xy,t}$ is the absolute value of the price difference $|P_{xt} - P_{yt}|$,
- $fuel$ represents diesel fuel pump price in thousands of Malawian Kwacha (MWK),
- $dist$ represents the absolute value of the route distance over paved road between the two markets in (`00Km)
- X is a set of market-pair time varying controls such as population density, and local production
- We include distance-specific cubic time trends, $\sum_{j=1}^{3}(dist_{xy})t^j$, to pick up differential effects by distance of potential omitted variables that change slowly over time such as road quality changes

Data

- Monthly consumer price monitoring panel data that the MNSO collects to compute CPI.
- Monthly retail prices for 26 homogeneous foods collected across 32 markets from Jan 2007 to July 2021
- We also compiled secondary data from various sources:
  - Monthly average diesel pump prices MERA
  - Route distances over paved roads between market pairs from the Google Maps

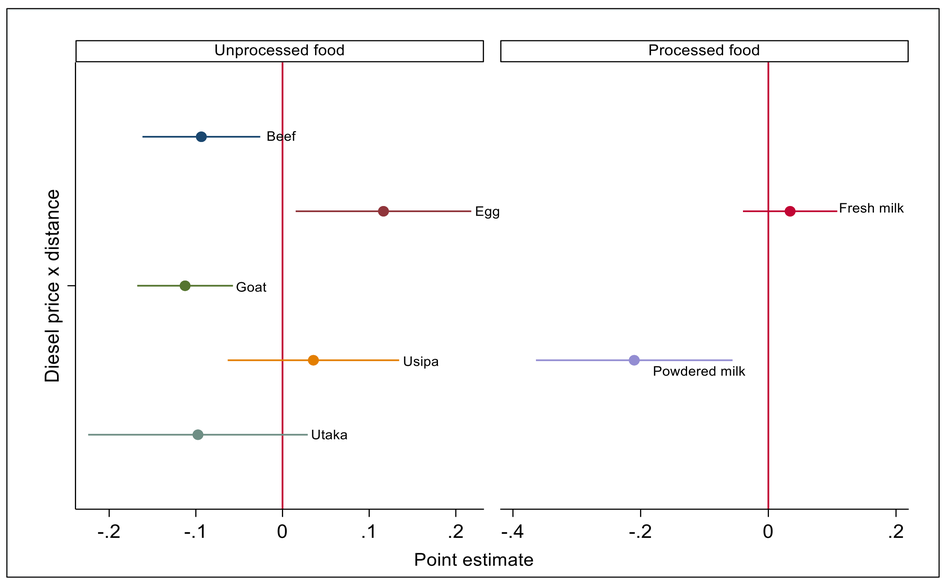
Results

Do transport costs affect price differential for staples including roots and tubers?



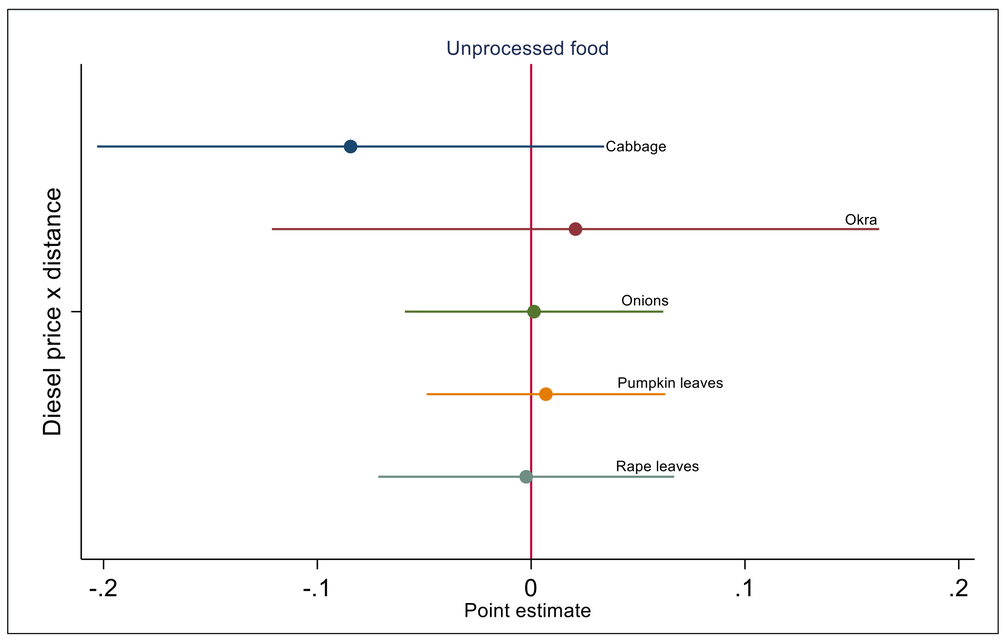
- Key findings:
  - Positive and significant impact of transport costs on price differences for maize flour dehulled, maize grain (private), and maize grain (ADMARC)
  - Negative and significant impact of transport costs on price differences for rice grain

Do transport costs affect price differentials for animal source foods?



- Key findings:
  - Positive and significant impact of transport costs on price differences for eggs
  - Negative and significant impact of transport costs on price differences for beef, goat meat, and powdered milk

Do transport costs affect price differentials for vegetables?



- Key finding:
  - Transport costs have no significant impact on price differences for vegetables.

Policy Implications

- Given the importance of maize grain and eggs in a Malawian diet
  - there are both food security and nutrition implications of increasing transport costs in the short run.
- Since the increase in transport costs will limit trade, increase consumer prices, and reduce food availability in deficit locations
  - there is need to devise strategies that will minimise the effect of fuel costs on distance.

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