

# Do Farming Rural Households Benefit from High Food Prices? Panel Evidence from Rural Households in Ethiopia

Nigussie Tefera (JRC/MARS), Mulat Demake (FAO), Shahidur Rashid (IFPRI) and Francois Kayitakire (JRC/MARS)



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# OUTLINE



- Background
- Methodology
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# Background



- The World has experienced unprecedented increase in food prices since 2007/08  
→ Food and Financial crisis
- High food prices are a serious treat for many poor people in developing countries (Ivanic and Martin, 2008; Mitchell, 2008; von Braun, 2008; Loening and Oseni, 2007; Robles and Maximo, 2010; Wood et al. 2009)
  - Food accounts for more than 60% of total expenditure
- It can also represent an opportunities for those households making a living from agriculture (de Janvry and Sadoulet, 2009). Most of poor households in developing countries live in rural areas and are both producers and consumers of a products.
- Transfer of income from generally richer net-food buyers to poorer net food sellers (Aksoy and Isik-dikmelik, 2008, 2009)
- High food prices have a positive impact on welfare of household at aggregate level, albeit the benefit is not evenly distributed among the population (Minot and Dewina, 2013; Ferreira et al., 2013; Vu and Glewwe, 2011; Cranfield and Haq, 2010; Tefera et al., 2012)

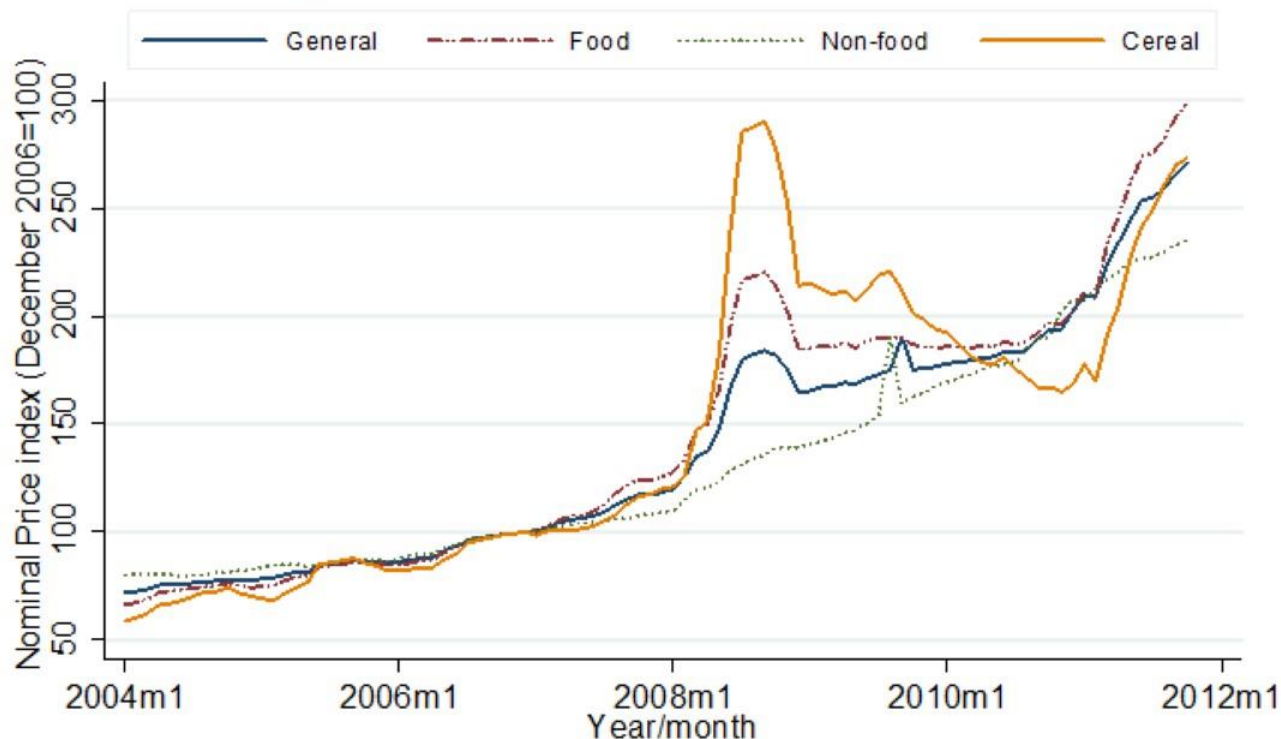
- Agriculture is the mainstay of the Ethiopian Economy
- It accounts for
  - 41% of GDP
  - 85% of rural employment → smallholders farming households
  - 90% of export
- Recurrent drought
- 6.5% growth per annum since 2003/04 (MoFED, 2011, World Bank, 2012)
- Poverty level improved from 39.6% in 2004 to 29.6% in 2001 (World Bank, 2012)
  - Agriculture contributes for much of the growth ...



# Background

- ... has experienced high (food prices) inflation since early 2005

Fig. 1: Consumer Price Index since 2004



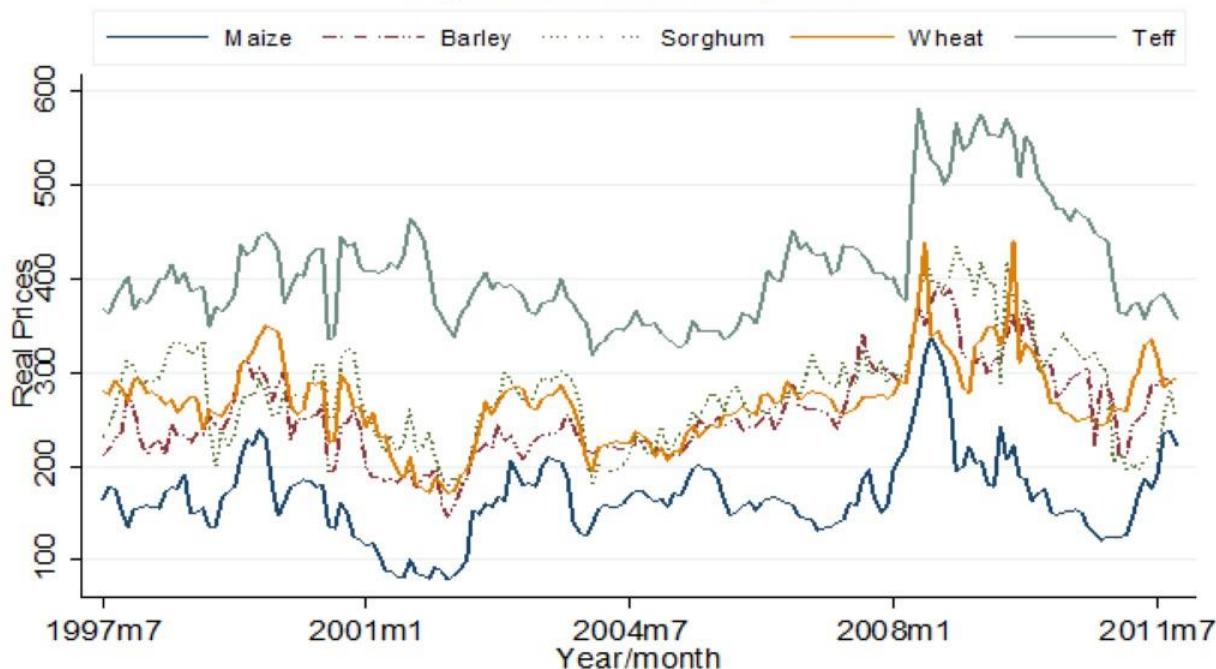
Source: Authors' estimation using CSA consumer price data

Inflation since 2007/08

- Unprecedentedly increased since 2007/08
- Cereal inflation reach at all time high in October 2008

- Real food prices significantly increase in 2009

Fig. 2: Cereal real prices



Source: Authors' estimation using CSA price data

## Real prices of staples

- Real prices of teff is highest and maize is lowest
- Real cereal prices were also high in 2009/10
- Food prices are more volatile and variable

- Studies on impact of such price movements on welfare of rural smallholders are Ethiopia limited (Loening and Oseni; 2007; Tefera et al., 2012)
  - First order approximation of the NBR analysis → neglect substitution effects.
- In the medium-to-long-term rising in real food prices could often accompany by changing household consumption preferences
- It would be more progressive for rural farming households as they are both producers and consumers of products.
- This study examines welfare impact of rising food prices on rural smallholders in Ethiopia using data three years and two years before and after the 2007/08 high food prices → with impact of substitution and income effects.
- Explores impact of welfare changes on poverty at household levels.

- Second-order Taylor Expansion of Compensating variation (CV)

$$CV = e(p_0^c, u_0) - e(p_1^c, u_0) + \pi(p_1^p, z_1) - \pi(p_0^p, z_0) \quad (1)$$

$$\begin{aligned} \frac{CV}{Y_0} = & \sum_{i=1}^N s_{i0} \Delta \ln p_i^p - \sum_{i=1}^N q_{i0} \Delta \ln p_i^c + \frac{1}{2} \sum_{i=1}^N \sum_{i=1}^N q_{i0} \varepsilon_{ij} \Delta \ln p_i^c \Delta \ln p_j^c \\ & + \frac{1}{2} \sum_{i=1}^N \sum_{i=1}^N s_{i0} \theta_{ij} \Delta \ln p_i^p \Delta \ln p_j^p + \sum_{i=1}^N x_{i0} \Delta \ln z_i \\ & + \frac{1}{2} \sum_{i=1}^N \sum_{i=1}^N x_{i0} \gamma_{ij} \Delta \ln z_i \Delta \ln z_j \end{aligned} \quad (2)$$

where;

- CV= Compensating variation
- $Y_0$ = Base year income
- $p_i^p$ = Producers price
- $p_i^c$ = consumers price
- $\varepsilon_{ij}$ ,  $\theta_{ij}$  and  $\gamma_{ij}$  are demand, supply and input elasticities, respectively



# Data sources



## ERHS panel data

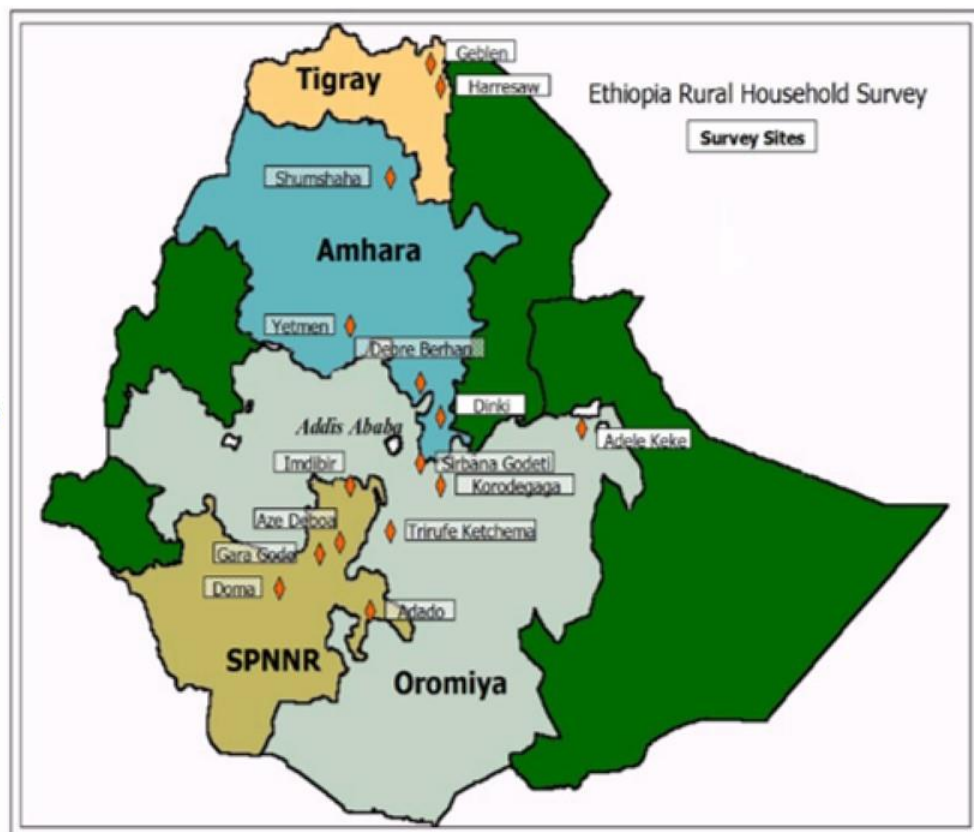
AAU in collaboration with CSAE and IFPRI.

It is more appropriate for the analysis before and after rising food price

EHHS has been collected in seven rounds (between 1994 and 2009) from 18 villages across the country and covered 1865 households

This study uses 2004 and 2009 survey  
A balanced panel with 1,476 households observed in each year

## Map of Survey Villages (locations)



Note: All borders and survey site locations are approximate. Source of basic map (country and regional borders) : UNDP-EUE, 1998. < [http://www.sas.upenn.edu/African\\_Studies/eue\\_web/graphics/newzones.gif](http://www.sas.upenn.edu/African_Studies/eue_web/graphics/newzones.gif)>. Updated February 15. (accessed May 16, 1999). SPNNR is Southern Peoples Nations and Nationalities Region

# Descriptive Statistics



## Food accounts for the largest share of budgets (about 78%)

Table 1: food budgets share, purchase and sales share in total food exp.

	Food share in total HH budget		Purchase and sales share of total food consumption expenditure				Real prices	
			2004		2009			
	2004	2009	Purchase (%)	Sales (%)	Purchase (%)	Sales (%)	2004	2009
Food	77.8	78.9	-	-	-	-	-	-
Cereals	44.7	46.4	17.90	17.38	19.16	8.14	-	-
Teff	10.3	10.9	3.05	5.28	2.11	5.57	2.15	2.67
Barley	7.0	4.8	2.19	0.64	0.51	0.05	1.13	1.38
Wheat	9.0	11.6	4.70	7.76	6.50	0.58	1.39	1.53
Maize	11.5	10.4	5.53	3.49	5.82	1.72	0.92	1.05
Sorghum	6.9	8.7	2.42	0.21	4.22	0.22	0.99	1.15
Root crops	9.7	7.6	2.09	2.67	2.02	1.25	0.91	1.06
Pulses and oilseeds	8.5	8.2	6.03	4.50	4.89	5.20	1.67	1.94
Fruits & vegetables	2.2	4.0	1.71	10.23	2.87	15.34	1.21	1.26
Animals products	9.1	9.2	4.44	36.25	3.49	56.71	6.99	8.03
Other foods	25.9	24.7	18.96	76.27	16.77	66.42	3.19	3.18

Source: Authors' computation from ERHS panel data

# Empirical Results

	1 <sup>st</sup> order	2 <sup>nd</sup> order	20% consumers & 10% producers prices increase	Losers	Welfare loses among losers	Gainers	Welfare gain among gainers	Poverty at household level; 2004 as a base and 0.7% and 0.9% welfare increase		
			2 <sup>nd</sup> order	% of HH	2 <sup>nd</sup> order	% of HH	2 <sup>nd</sup> order	2004	0.7%	0.9%
All Households	0.003	0.007	0.009	38.85	-0.062	61.15	0.050	33.1	31.3	31.1
Income quintiles										
Q1 (lowest)	-0.003	0.001	0.002	48.65	-0.064	51.35	0.063	49.3	46.6	46.3
Q2	-0.002	0.002	0.004	38.64	-0.074	61.36	0.050	42.7	42.3	42.3
Q3	0.010	0.014	0.018	32.31	-0.066	67.69	0.052	37.2	34.1	34.1
Q4	0.001	0.004	0.006	38.64	-0.060	61.36	0.044	25.0	22.6	22.3
Q5 (highest)	0.007	0.012	0.016	35.93	-0.045	64.07	0.044	11.3	10.6	10.6
Cereals net marketing position										
Net-cereal buyers (50% HH)	-0.019	-0.016	-0.018	55.35	-0.073	44.65	0.056	32.8	30.6	30.3
Net-cereal sellers (25% HH)	0.022	0.029	0.036	18.31	-0.050	81.69	0.046	24.3	23.0	23.0
Autarkic (25% of HH)	0.025	0.029	0.036	26.42	-0.023	73.58	0.048	42.6	40.9	40.9



# Concluding remarks

- Real food prices have increased between 2004 and 2009
  - The real food prices is much higher in 2009
- Increase in real prices of animal products, pulses and fruits and vegetables are higher than cereal crops
- Welfare effects of rising food prices are computed from sales and purchase and received as gift and remittance share in total food consumption as rural households in Ethiopia do not entirely depend on market
- At aggregate level, rural households benefit from rising real food prices. Welfare gains further improve with substitution effects, albeit not evenly distributed among populations.
- There are households hit hard by high food prices. These include about 45% of net cereal buyers.
- Increasing agricultural intensification through providing access to fertilizer and improved seed varieties can help household affected by high food prices to be net-seller.
- Higher prices stimulate production, leading to lower prices in the long term
  - boost investment in value chain development and transform the rural economy.
  - Input prices (fertilizer) have gone up significantly – faster than output prices

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# Thank you

**For questions please contact:**

**[nigussie.tefera@jrc.ec.europa.eu](mailto:nigussie.tefera@jrc.ec.europa.eu) or  
[nigtefera@yahoo.com](mailto:nigtefera@yahoo.com)**