

The impact of large-scale social protection interventions on grain prices in poor countries: Evidence from Ethiopia

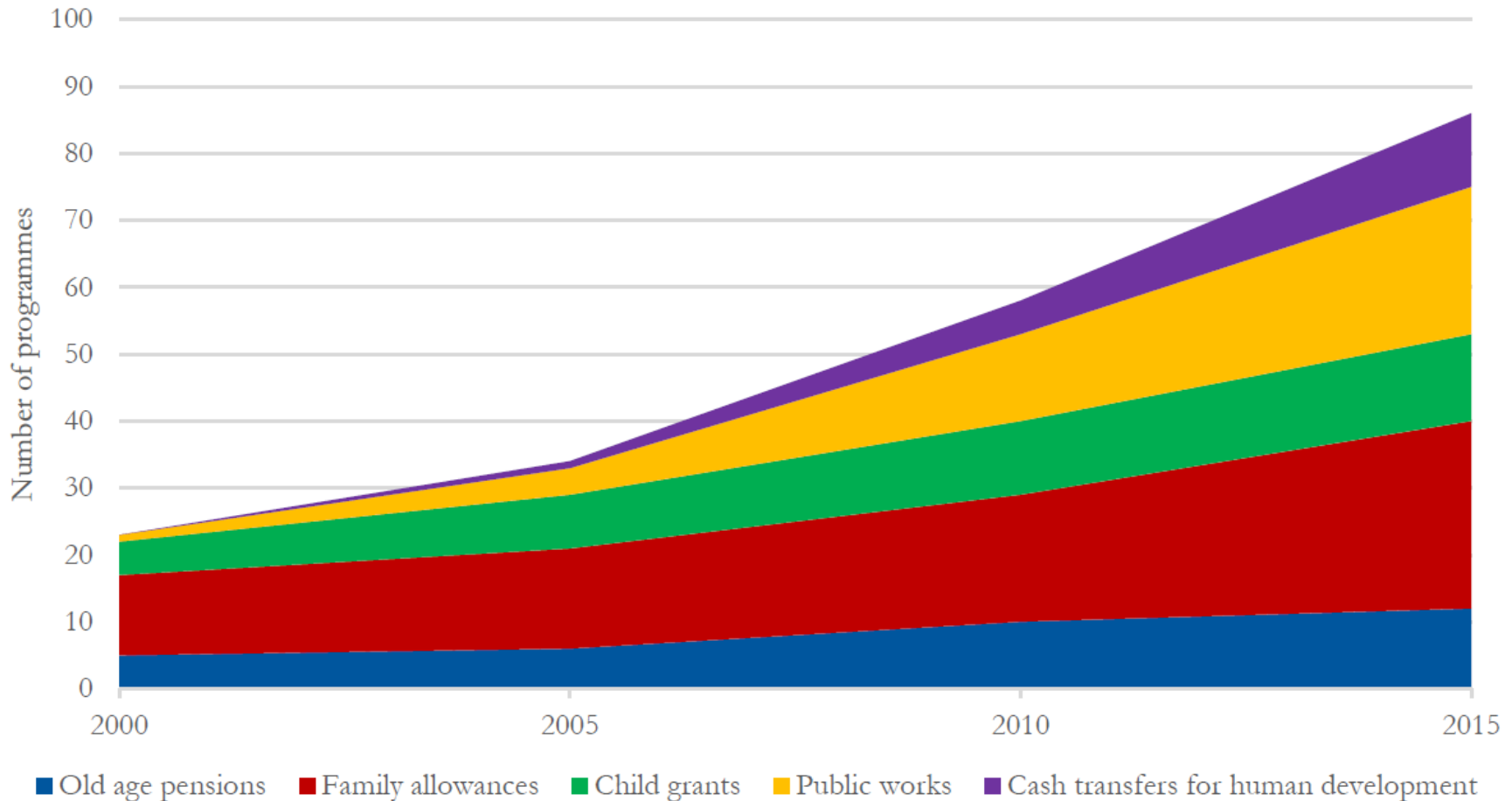
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SSA: The number of social protection programs tripled in the last 15 years



Source: Hickey, Lavers, Niño-Zarazúa & Seekings; WIDER Working Paper 2018/34

Social Protection Programs

- Aim to reduce poverty and food insecurity by facilitating consumption smoothing and asset accumulation.
- Globally, these types of programs have reached more than 1.5 billion people (Alderman et al, 2018).
- Estimated to have lifted more than 100 million people out of extreme poverty (Fizbein et al, 2014) and contributed towards better welfare outcomes (Haile & Niño-Zarazúa, 2017).
- Recent meta-analysis by Hidrobo et al. (2018) on the impacts of social protection in low & middle income countries:
 - increases the value of food consumption by 13%
 - increases caloric acquisition by 8%
 - increases holdings of productive assets, livestock, & savings



But there are persistent concerns:

Social protection/assistance:

1. Reduces labor effort? (Hoddinott et al 2012, Galama et al, 2017)
2. Crowds out private transfers? (Albarran & Attanasio, 2002; Berhane et al, 2014)
3. Increases fertility? (Palermo et al, 2016; Hoddinott & Mekasha, 2017)
4. Increases the consumption of temptation goods? (Evans & Popova, 2017)
5. **Has some pecuniary effects / price effects (focus of this study)**



Price effects of aid/social assistance

- Evidence from aggregate food aid flows and/or national markets:
 - Negligible price effects (Gelan, 2007; Garg et al, 2013; Mabuza et al, 2009; Tadesse and Shively, 2009)
 - Large negative impacts (Levinsohn and McMillan, 2007; Tschirley, Donovan and Weber, 1996)
- MUCH less is known about the effects of cash transfers on local food prices and even less about how they compare to food transfers.
- Cunha, Di Giorgi and Jayachandran (2017), rural Mexico:
 - Prices are lower under in-kind transfers compared with cash transfers. Relative to their control group (no transfers), in-kind transfers lead to a 4 percent fall in prices while cash transfers lead to a positive but small (& insignificant) increase in prices.
 - Both effects were more pronounced in more remote villages (but the estimated effects are imprecisely estimated).



Some theory

- The impacts of cash and food transfers on local food prices depend on the assumptions we make about:

- 1) Open or closed economy; if open, supply curve is flat
- 2) Size of the transfer; if small, then negligible price effects
- 3) How well markets function; perfect or imperfect competition (oligopolistic)
- 4) Magnitude of the income elasticity of demand; 'how much the income effect shifts the demand curve'
- 5) Whether food transfers can be re-sold

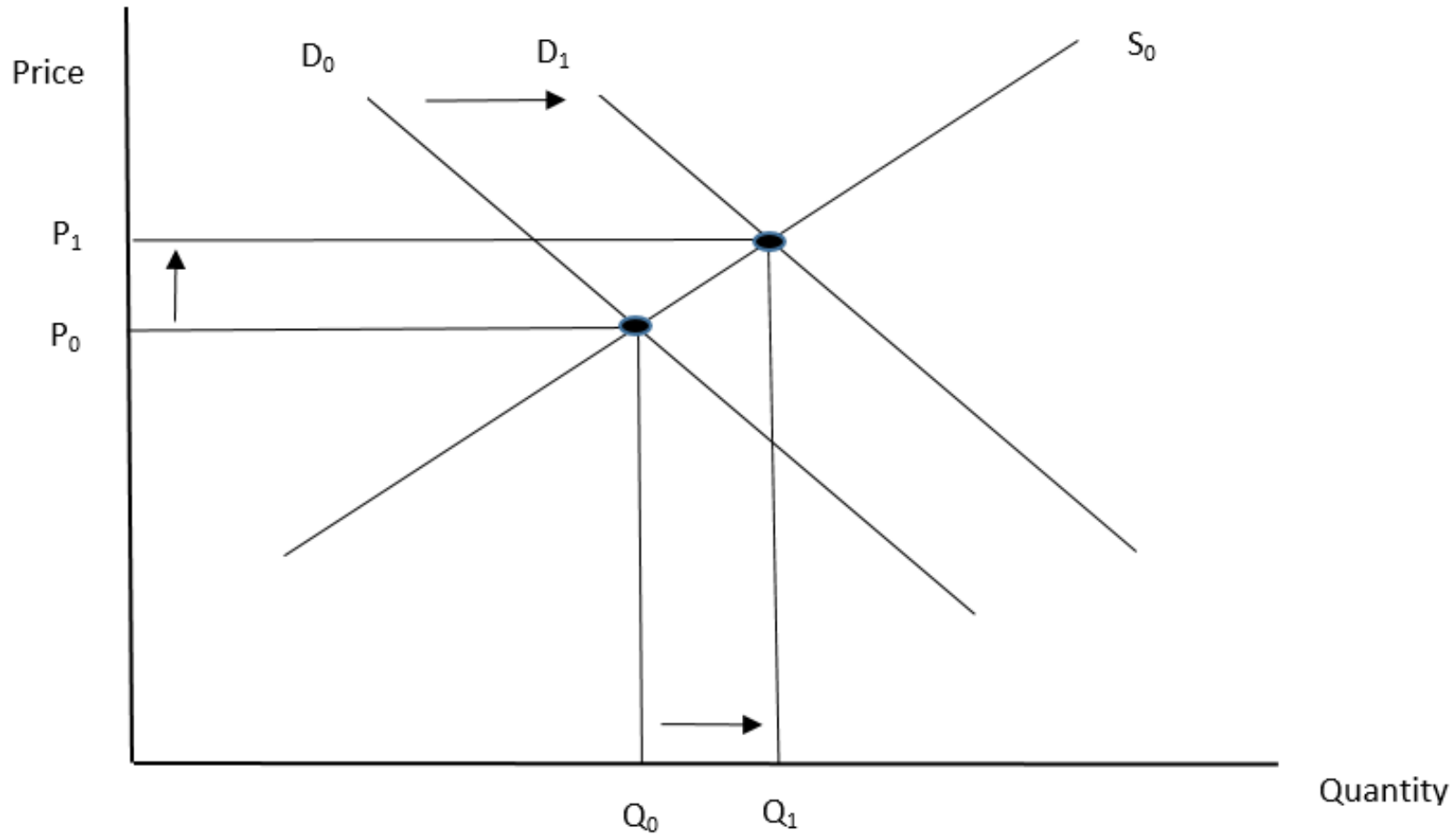
+ in the context of multiple grain markets (as in Ethiopia):

- 6) Cross price elasticities (are products substitutes or complements?)

To fix ideas, let's consider the case where we have a) perfect competition and b) a case where food transfers cannot be re-sold

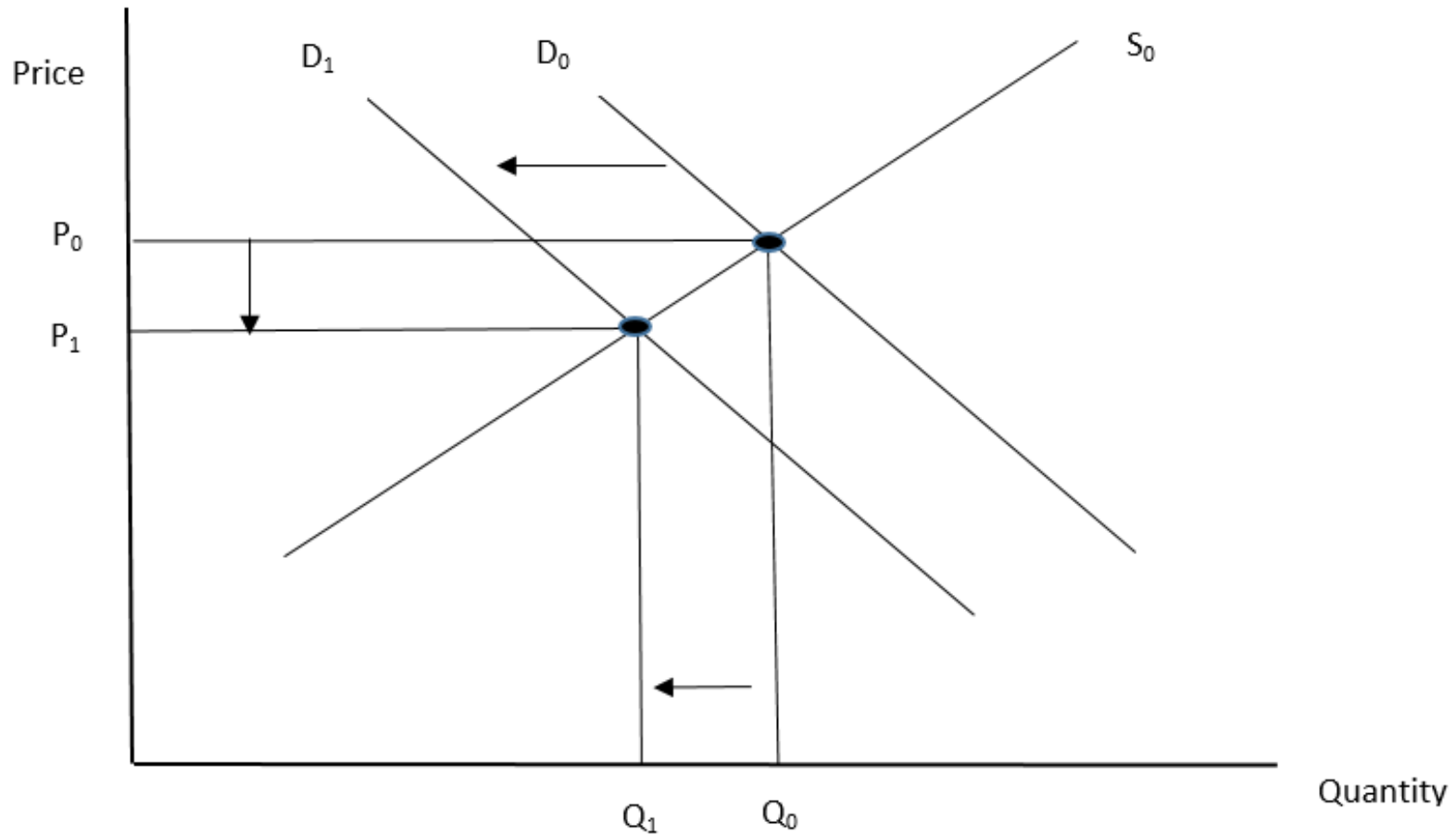


Impact of a cash transfer on a grain market



Impact of a food transfer on a grain market

-- when food transfers cannot be re-sold



Things get more complicated if..

- Food transfers can be re-sold; shifts both demand and supply curves; price effects become theoretically ambiguous
- Markets are imperfect: monopolistic or oligopolistic; price effects are larger if less competition (other things equal).
- Dynamic effects are at play:
 - Cash transfers may induce new traders to enter the market
 - Food transfers is less like to have such an effect



Ethiopia's Productive Safety Net Program

- Established in 2005, PSNP “. . . provides transfers to the food insecure population in chronically food insecure woredas in a way that prevents asset depletion at the household level and creates assets at the community level”.
- About 8 million chronically food insecure people; 2nd largest SP program in Africa
 - Provides monthly transfers during slack season against public works
 - Direct support for households with limited labour capacity

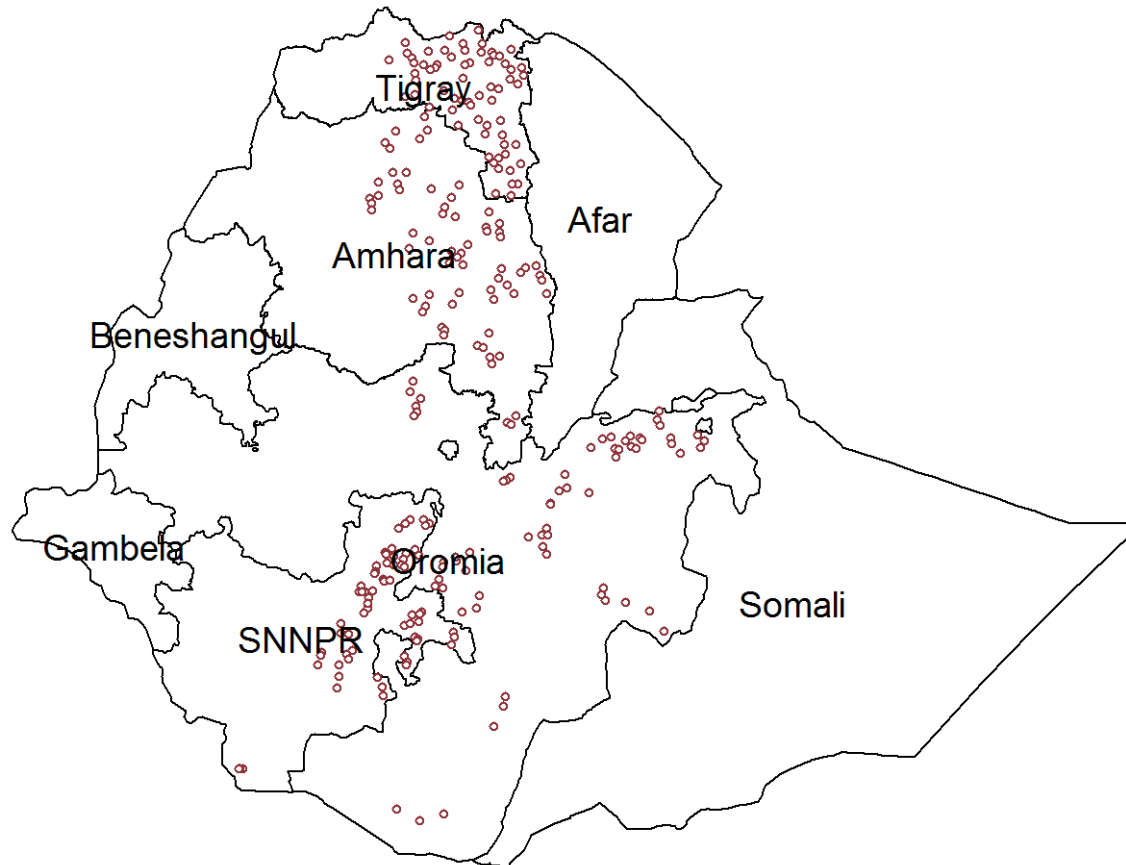


Food or cash payments

- Food payments consist of 3 kilograms of cereals for each day worked. They are typically made in the form of wheat or maize and almost exclusively sourced from the international market.
- Cash payments are intended to be approximately equal the value of the food payments.
- Transfers are sizable: on average around 15 % of household annual income
- Coverage levels vary, but in some localities more than 70 % of households receive these transfers
- 93 % of HHs that received food transfers reported that they never sold any of them. The rest did so rarely.

Data

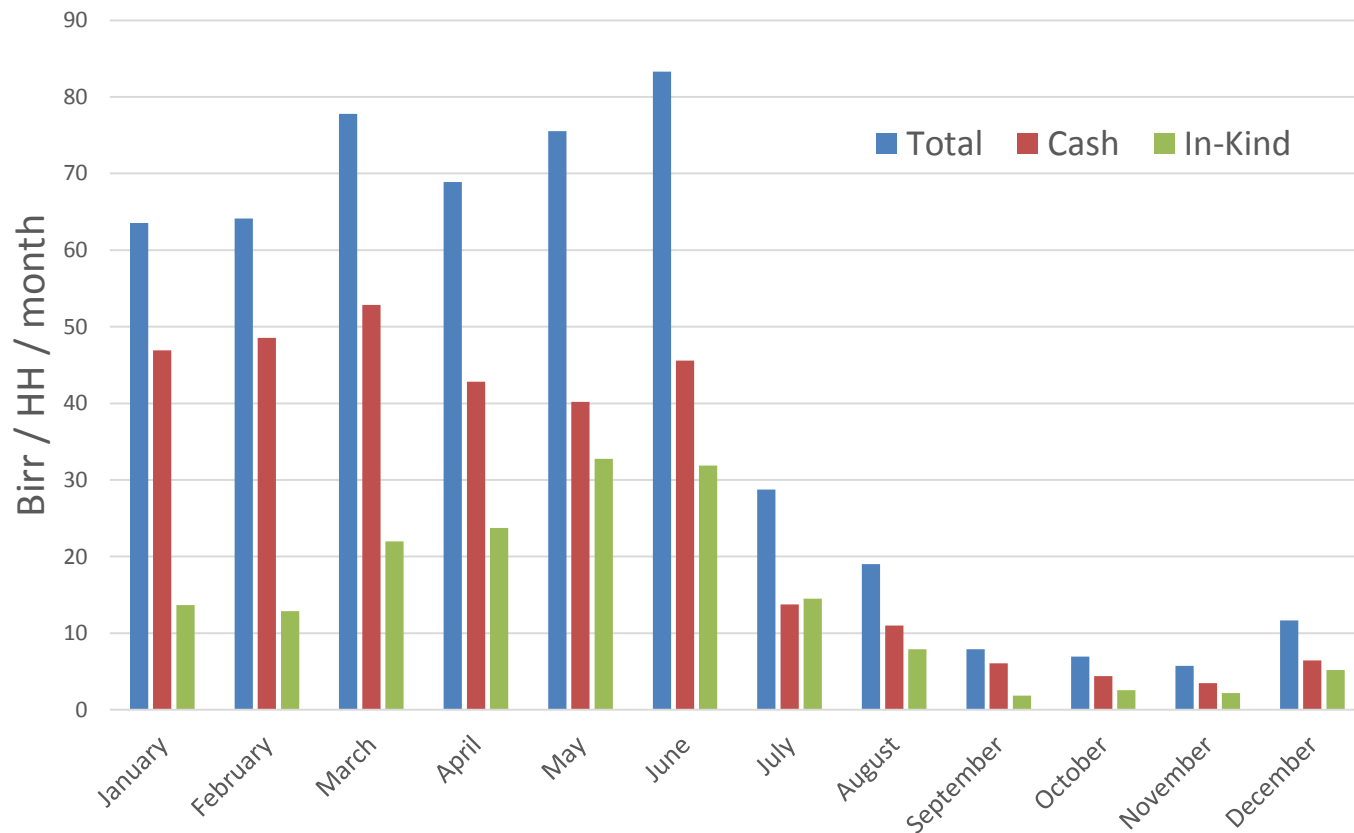
- Evaluation data: HH survey from Jan/Feb 2016 + community surveys
- Representative of the area in which the program operates
- This study: highland regions (Amhara, Oromia, SNNP and Tigray)



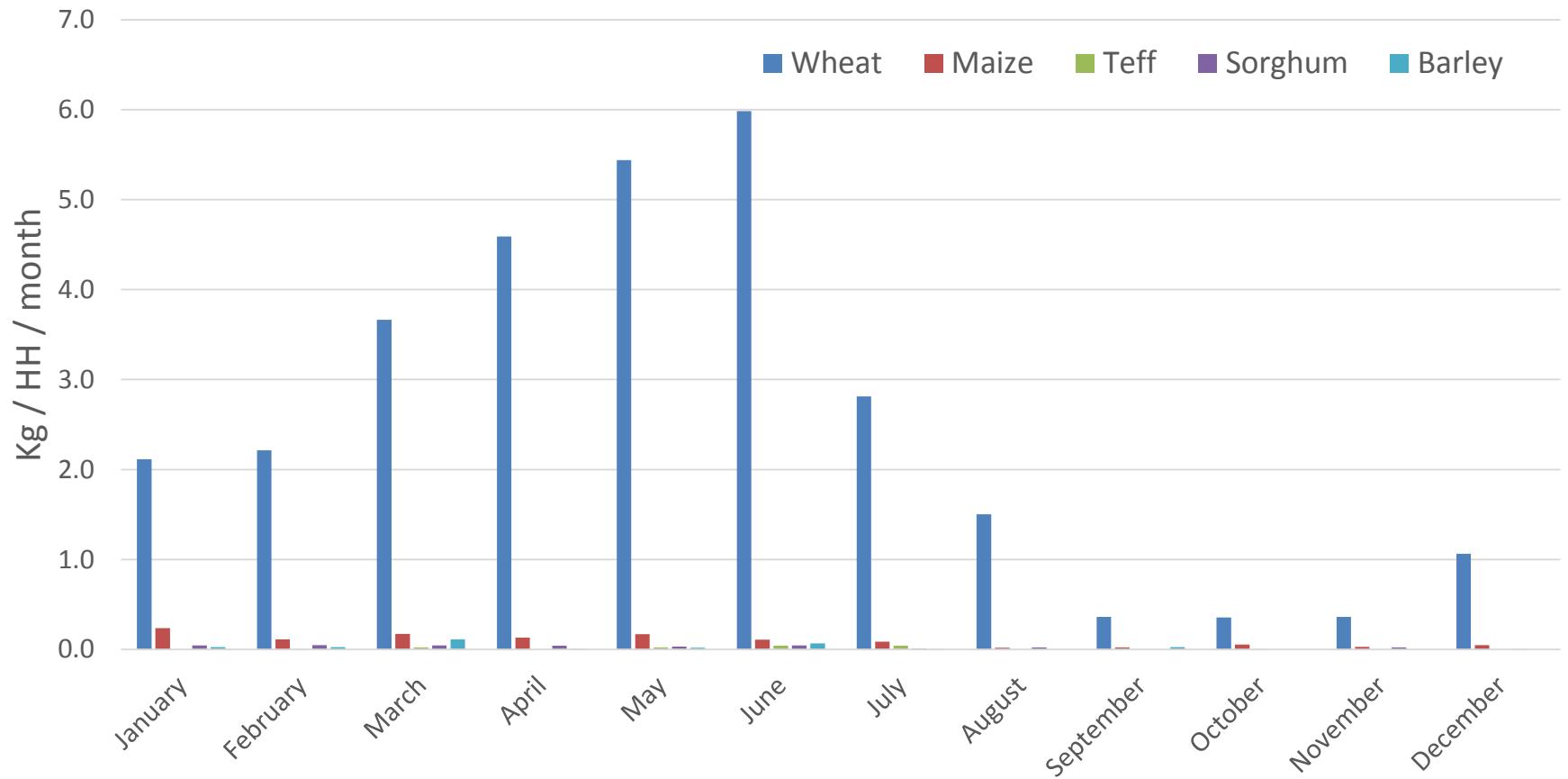
Data Constructions

- Kebele level analysis using monthly data for January – December 2015
 - Monthly PSNP payments (recall)
 - Retail price data for 3 grains most commonly consumed in the area (recall)
- In total, the survey included 88 woredas and 264 kebeles (i.e. three kebeles in each surveyed woreda). The PSNP operated in 233 of these kebeles in 2015. PSNP operations were scheduled to start in the remaining 31 kebeles in 2016. As such, they are not included in this analysis.
- Our primary unit of observation is a grain price observed in a given kebele in a given month.
- Final sample size consists of 233 kebeles x 12 months x 2.37 prices per kebele per month (on average) yielding **6,633 kebele-month-price observations**.

Mean value of cash and in-kind transfers



Mean level of in-kind transfers (kg)



	Mean	Standard Deviation
Grain prices		
All grains (birr / kg)	7.83	4.26
All grains (z-score)	-0.12	0.96
Wheat (birr / kg)	7.51	2.52
Maize (birr / kg)	5.42	1.85
Teff (birr / kg)	12.27	4.92
Sorghum (birr / kg)	6.58	3.17
Barley (birr / kg)	6.11	3.20
Transfer levels (kebele means)		
PSNP cash transfer (birr / HH)	27.1	50.5
PSNP In-kind (wheat & maize kg / HH)	2.86	8.24
PSNP In-kind (wheat kg / HH)	2.71	7.71
PSNP In-kind (maize kg / HH)	0.10	0.92
Market characteristics		
Daily market (share)	0.13	0.33
Market has 50+ traders (share)	0.72	0.45
Number of food items in market	25.3	6.5
Market has permanent structures (share)	0.58	0.49
Market has cell phone reception (share)	0.94	0.24
Market has electricity (share)	0.71	0.45
Market has good road (share)	0.85	0.36
Distance to city of 20K (km)	46.5	30.1

Model

Treat kebele as a local economy.

For price level (z-score) p of grain i in kebele k located in woreda w at time (month) t :

$$p_{iwkt} = \alpha + \beta_1 TRCash_{wkt} + \beta_2 TRKind_{wkt} + X'_{wk}\gamma + \theta_i + \delta_t + \mu_w + \varepsilon_{iwkt},$$

$TRCash_{wkt}$: the average cash transfer per household

$TRKind_{wkt}$ is the average in-kind (food in kg) transfer per household

X_{wk} : observable time-invariant characteristics of the food market

θ_i : grain type fixed effects

δ_t : calendar month fixed effects

μ_w : woreda (district) fixed effects

ε_{iwkt} : disturbance term

Identification

- Three-way Fixed Effect model: commodity, month and woreda
 - Comparison of kebeles (sub-districts) within the same woreda
 - (Results robust to kebele FEs; comparison of different calendar months within a kebele)
- Concerns:
 1. *Payment modality (food or cash) is a choice made by program implementers, and this choice may depend on observed prices*
 - These decisions are made at the woreda level -- prior to the annual implementation of the PSNP
 - Unobservable characteristics that led to the choice of payment type are thus fixed over the twelve-month time period of our data and are therefore captured in the woreda fixed effect.
 2. *Causality might run from food prices to the level of payments; administrators allocated more employment to localities where food prices were higher or households adjusted their labour efforts according to prices.*
 - These allocations are also fixed prior to the observation of prices as is the amount of work participants can undertake. --> woreda fixed effects.

Impact on grain prices (in z-scores)

	(1)		(2)	
	Coeff	95% CI	Coeff	95% CI
Cash transfer (birr)	-0.0002	-0.0007; 0.0004	-0.0001	-0.0007; 0.0004
In-kind (wheat & maize kg)	-0.0034	-0.0082; 0.0015	-	-
In-kind (wheat kg)	-	-	-0.003	-0.008; 0.0022
In-kind (maize kg)	-	-	-0.023**	-0.0359; -0.0104

Controls: grain type dummies, calendar month dummies, woreda fixed effects and kebele market characteristics. N=6,633 price observations.

*** $p < 0.01$, * $p < 0.05$. Standard errors clustered at the woreda level.*

Effect of an average effects

‘multiply the point estimates by the avg respective transfers & SD of prices’

	estimate	estimate
Average cash transfer (birr)	-0.0178	-0.0161
Average in-kind (wheat & maize kg)	-0.041	-
Average in-kind (wheat kg)	-	-0.036
Average in-kind (maize kg)	-	-0.010**

- An average PSNP transfer of 0.10 kg of maize to each household in a kebele reduces grain prices by 0.01 birr – or 0.13 %

Results by cereal type

- Cash transfers have no effect on the prices of the five grains sold in local markets: wheat, maize, teff, sorghum and barley.
- Wheat transfers lower the price of maize (the only a statistically significant impact).
- But the magnitude of this effect is small:
 - The effect of the average transfer = a reduction of 0.057 birr.



Results by remoteness

- Define remoteness as being 25 or 40km from the nearest city with a population of 20,000.
- These markets have fewer traders & offer less choice
- Method: Interact remoteness dummy with transfer values

Results by remoteness

- Effect of an *average* transfer:

	Remote > 25km	Remote > 40km
<i>Close to cities</i>		
PSNP cash transfer (birr)	-0.032	-0.009
PSNP In-kind (wheat & maize kg)	-0.044	-0.004
<i>Remote</i>		
PSNP cash transfer (birr)	-0.017	-0.041
PSNP In-kind (wheat & maize kg)	-0.038	-0.096*

- The effect of an average PSNP transfer of 0.10 kg of maize to each household in a kebele is to reduce grain prices by 0.1 birr – or 1.2 %

Summary & conclusions

1. Cash transfers have no effect on food prices
2. There is some evidence that food transfers reduce food prices:
 - Maize transfers reduce aggregate grain prices, wheat transfers reduce the price of maize
 - The negative effect of food transfers on food prices is larger in more remote markets
 - Given that food transfers are not re-sold, this is consistent with infra-marginal transfers having the effect of reducing food demand in markets that are not fully competitive or open
3. **BUT** the magnitudes of all these effects are trivially small, both in absolute and percentage terms.

Our results suggests that worries about pecuniary externalities of social protection programs on local grain markets (through disincentives for local producers or food price inflation for buyers of food) in poor countries seem unwarranted.