

# The impact of the Kenya CT-OVC Program on household spending

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# Kenya Cash Transfer Program for Orphans and Vulnerable Children (CT-OVC)

- Government's flagship social protection program.
- Reached 100,000 households and 230,000 OVC across the country as of mid 2010.
- Targets households who are ultra-poor and contain an OVC
- Eligible households receive a flat monthly transfer of 21 USD (Ksh 1500).
- Care and protection of the resident OVC is hh's responsibility for receiving the cash payment.
- Currently no punitive sanctions for noncompliance.



# Aim of the paper

- To investigate whether the CT-OVC has changed the preferences of households in terms of their consumption behavior



# Outline

1. CT-OVC Evaluation Design and Sample
2. Impact of the CT-OVC on Expenditure Patterns
3. Ex-Ante Predictions of Program Impacts
4. Testing for Elasticity Changes
5. Conclusion



# 1. Evaluation Sample and Design

- 2,759 households in the evaluation sample
- 2/3 assigned to treatment
- 17% drawn from wider population and does not enter into estimation of program impacts
- Among true Treatment (T) and Controls (C) [N=2294], 1907 were again interviewed in 2009 (17% attrition rate)
- Final sample for analysis: N=1849 in the panel (excludes households with missing information on key variables)



# Household items

Category	Items included
Food	All foods
Domestic	Paraffin, kerosene, charcoal, firewood, washing powder, laundry soap, detergents, matches, candles, batteries, bulbs, textiles, kitchen equipment, lanterns, lamps, torches
Health and Hygiene	toilet soap, other toiletries, hair cut and personal services, medicines and medical supplies (excluding AIDS drugs), consultation and treatment fees, laboratory and diagnostic fees, visits to traditional healers, hospitalization fees, other health expenditures
Transportation and Communication	bus fares, matutu, taxis, other transport expenses, transport to and from health facility, transport to and from school
Housing	water and utilities [Note: excludes rent due to the fact that only a small proportion of households (8.8% at baseline) reported paying any rent.]
Education	tuition fees, registration fees, exam fees, other fees, private tuition, uniforms including school shoes, school supplies including textbooks
Clothing	men's clothing, children's clothing, women's clothing, footwear
Other	books, notebooks, newspapers, stationery, TTK, recreation, personal items (umbrella, watch, lighter, etc.)
Alcohol and Tobacco	alcohol and tobacco



# Food categories

Category	Items included
Cereal	maize, rice, other grains, bread
Tubers	cassava, potatoes, arrow roots, yams, cooking banana
Meats and Fish	fresh fish, dried fish, smoked fish, beef, chicken, other meat
Dairy	milk, eggs
Fruits and Vegetables	sukuma wiki, other vegetables, bananas, other fruits, beans, pulses, nuts
Other Foods	cooking fat, cooking oils, sugars, spices, tea leaves/tea bags, coffee and other non-alcoholic drinks
Foods Eaten Out	meals eaten out and other ready-made foods



# Table 1. Mean Spending, broad household items

<b>Panel A. Broad household item groups</b>					
	(1)	(2)	(3)	(4)	(5)
	Treatment		Control		
	Wave 1	Wave 2	Wave 1	Wave 2	
	AE Monthly Expenditure				p-value
Total	1435.32	1718.76	1445.96	1447.21	0.81
Food	858.74	1148.63	819.22	955.36	0.11
Domestic	207.00	167.43	204.26	151.31	0.72
Health, Hygiene	85.49	122.35	108.22	107.74	<b>0.03</b>
Trnspt, Communication	101.15	79.22	127.73	72.28	<b>0.02</b>
Housing	34.64	25.77	36.48	18.49	0.67
Education	78.18	81.88	81.54	68.39	0.75
Clothing	54.05	74.94	51.94	49.12	0.66
Other	8.99	15.66	11.08	19.60	0.47
Alcohol, Tobacco	7.08	2.98	5.48	4.93	0.37
	Shares				
Food	0.615	0.672	0.600	0.670	0.080
Domestic	0.151	0.102	0.150	0.105	0.768
Health, Hygiene	0.055	0.066	0.066	0.072	<b>0.008</b>
Trnspt, Communication	0.061	0.043	0.070	0.047	<b>0.038</b>
Housing	0.026	0.015	0.023	0.013	0.245
Education	0.050	0.050	0.046	0.049	0.320
Clothing	0.033	0.042	0.035	0.031	0.471
Other	0.004	0.009	0.005	0.011	0.322
Alcohol, Tobacco	0.005	0.002	0.004	0.003	0.937





# Table 1. Mean Spending, food groups

<b>Panel B. Food groups</b>					
	(1)	(2)	(3)	(4)	(5)
	Treatment		Control		
	Wave 1	Wave 2	Wave 1	Wave 2	
	AE Monthly Expenditure				p-value
Cereals	268.79	448.53	260.83	389.61	0.37
Tubers	53.50	10.91	39.55	10.07	<b>0.00</b>
Meat, Fish	122.17	159.20	118.77	110.95	0.70
Dairy	48.14	81.88	51.59	51.22	0.36
Fruit, Vegetables	188.26	218.74	170.66	189.41	<b>0.01</b>
Other Food	168.50	181.50	167.01	159.98	0.81
Food Eaten Out	9.38	15.15	10.81	13.92	0.49
	Shares				
Cereals	0.207	0.276	0.202	0.293	0.26
Tubers	0.038	0.006	0.029	0.007	<b>0.00</b>
Meat, Fish	0.071	0.085	0.075	0.068	0.35
Dairy	0.033	0.043	0.035	0.032	0.32
Fruit, Vegetables	0.134	0.131	0.123	0.135	<b>0.01</b>
Other Food	0.127	0.108	0.130	0.112	0.42
Food Eaten Out	0.006	0.009	0.005	0.008	0.77



## 2. Impact of the CT-OVC on Expenditure Patterns

- Difference-in-difference estimator (DD)
- Compares changes in expenditure among the T group before and after program initiation to the change in the same period among the C group

$$y_i = \alpha + \beta_1 X_1 + \beta_2 \ln ADJEXP + \beta_3 treat + \beta_4 time + \beta_5 (treat * time) + \varepsilon_i \quad (1)$$

- $y_i$ =spending on category i in levels
- ADJEXP=household total adult equivalent consumption expenditures
- Treat=0 for control HH; =1 for treatment HH
- Time=0 at baseline; =1 at follow-up
- X vector =set of controls (urban residence, female headship, the log of total household adult equivalents, and number of household residents in each of six demographic categories: 0-5, 6-11, 12-17, 18-45, 46-64, and 65 and up)
- $\varepsilon_i$ = random error term



# Table 2. DD estimates, broad groups

Panel A. Broad household item groups									
	(1)	(3)	(5)	(7)	(9)	(11)	(13)	(15)	(17)
	Food	Domestic	Health	Trnsprt&Comm	Housing	Education	Clothing	Other	Alc & Tobacco
Treat ( $\beta_3$ )	-5.305 (-0.20)	-7.016 (-1.00)	<b>-30.813</b> (-3.19)	<b>-25.965</b> (-3.06)	-1.317 (-0.36)	3.805 (0.47)	5.356 (1.10)	0.491 (0.16)	2.100 (1.32)
Time ( $\beta_4$ )	<b>166.423</b> (5.44)	<b>-47.454</b> (-5.84)	3.564 (0.32)	<b>-51.452</b> (-5.22)	<b>-16.524</b> (-3.88)	-9.614 (-1.01)	-1.739 (-0.31)	<b>11.418</b> (3.12)	-0.538 (-0.29)
Treat*Time ( $\beta_5$ )	<b>132.325</b> (3.62)	11.539 (1.19)	<b>34.590</b> (2.58)	<b>30.226</b> (2.57)	8.109 (1.59)	8.907 (0.79)	<b>24.200</b> (3.57)	-4.100 (-0.94)	-3.712 (-1.69)
Constant	<b>1,790.985</b> (33.55)	<b>443.026</b> (31.28)	<b>219.810</b> (11.22)	<b>199.611</b> (11.62)	<b>62.435</b> (8.40)	<b>33.699</b> (2.03)	<b>73.837</b> (7.45)	<b>15.635</b> (2.45)	<b>13.700</b> (4.27)
Observations	3,698	3,698	3,697	3,698	3,698	3,698	3,698	3,698	3,698
R-squared	0.210	0.162	0.030	0.026	0.022	0.036	0.024	0.085	0.017



# Table 2. DD estimates, food groups

	(1)	(3)	(5)	(7)	(9)	(11)	(13)
	Cereal	Tubers	Meat & Fish	Dairy	Fruit & Veg	Other Food	Eaten Out
lnADJEXP ( $\beta_2$ )							
Treat ( $\beta_3$ )	-3.368 (-0.32)	<b>11.227</b> (4.50)	-7.342 (-0.83)	-2.956 (-0.67)	2.037 (0.28)	-2.068 (-0.31)	-1.611 (-0.71)
Time ( $\beta_4$ )	<b>136.116</b> (11.25)	<b>-27.853</b> (-9.61)	-3.680 (-0.36)	2.792 (0.55)	<b>26.137</b> (3.04)	-2.672 (-0.34)	4.552 (1.73)
Treat*Time ( $\beta_5$ )	<b>46.833</b> (3.24)	<b>-13.926</b> (-4.02)	<b>40.856</b> (3.32)	<b>29.653</b> (4.86)	6.535 (0.64)	<b>18.765</b> (2.02)	1.552 (0.49)
Constant	<b>540.353</b> (25.60)	<b>83.242</b> (16.47)	<b>283.766</b> (15.81)	<b>86.328</b> (9.69)	<b>435.774</b> (29.06)	<b>320.312</b> (23.67)	<b>25.454</b> (5.54)
Observations	3,698	3,698	3,698	3,698	3,698	3,698	3,698
R-squared	0.216	0.177	0.062	0.049	0.169	0.085	0.020



# Key questions

- Are these effects high or low?
- Do the estimated impacts come solely from the increase discretionary money available to T households, or has the program somehow changed fundamental behaviors with respect to spending patterns?
- For example, have households changed their rates of time preference and become more forward looking because they can rely on a steady, reliable source of income, and have thus fundamentally changed their spending patterns accordingly?



# 3. Ex-Ante Predictions of Program Impacts

- Steps:
  - Derive expenditure elasticities from baseline data using Engel Curves
  - Use elasticities to predict HH responses to the program
- **Engel Curve:** relates budget shares devoted to various food groups to total household expenditures (Deaton & Muellbauer (1980))
$$(2)w_i = \alpha + \beta_1 X_1 + \beta_2 \ln(ADJEXP) + \beta_3 treat + \varepsilon_i$$
- $w_i$  = budget share for commodity i,
- ADJEXP i= household total adult equivalent consumption expenditures
- $X$  =vector of controls
- $\varepsilon_i$  = random error term



- Using eqn. (2), the marginal effect on the budget share of a change in total household expenditure is given by:
- (3) 
$$\partial w_i / \partial \ln(\text{ADJEXP}) = \beta_2$$
- Total expenditure elasticity can be derived by:
- (4) 
$$E_i = 1 + \frac{\left[ \frac{\partial w_i}{\partial \ln(\text{ADJEXP})} \right]}{w_i} = 1 + \left[ \frac{\beta_2}{w_i} \right]$$
- Elasticity=% change in spending in category i given a % change in ADJEXP



# Table 3. Engel Curve Estimates and Expenditure Elasticities, HH items

Panel A. Broad household item groups									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Food	Domestic	Health	Transprt&Comm	Housing	Education	Clothing	Other	Alc & Tobacco
lnADJEXP ( $\beta_2$ )	<b>-0.078</b> (-11.73)	<b>-0.025</b> (-6.75)	<b>0.010</b> (3.07)	<b>0.046</b> (13.11)	-0.003 (-1.19)	<b>0.028</b> (7.65)	<b>0.016</b> (6.56)	<b>0.006</b> (6.74)	0.000 (0.27)
Treatment	0.009 (1.16)	-0.004 (-0.80)	<b>-0.013</b> (-3.16)	-0.005 (-1.28)	0.003 (1.19)	0.007 (1.47)	0.003 (0.88)	-0.000 (-0.46)	0.000 (0.21)
Constant	<b>1.259</b> (22.16)	<b>0.403</b> (12.95)	-0.015 (-0.53)	<b>-0.302</b> (-10.11)	<b>0.049</b> (2.38)	<b>-0.243</b> (-7.85)	<b>-0.113</b> (-5.45)	<b>-0.042</b> (-5.99)	0.004 (0.53)
N	1,849	1,849	1,849	1,849	1,849	1,849	1,849	1,849	1,849
R-squared	0.095	0.077	0.022	0.115	0.004	0.108	0.054	0.035	0.025
Elasticity	0.871	0.836	1.176	1.725	0.886	1.568	1.475	2.175	1.058





# Table 3. Engel Curve Estimates and Expenditure Elasticities, Food groups

## Panel B. Food groups

	(1) Cereal	(2) Tubers	(3) Meat & Fish	(4) Dairy	(5) Fruit & Veg	(6) Oth foods	(7) Eaten Out
lnADJEXP ( $\beta_2$ )	<b>-0.073</b> (-17.81)	<b>-0.005</b> (-2.81)	<b>0.044</b> (12.24)	0.004 (1.88)	<b>-0.011</b> (-3.26)	<b>-0.041</b> (-10.45)	<b>0.004</b> (4.45)
Treatment	0.004 (0.74)	<b>0.006</b> (2.61)	-0.003 (-0.68)	-0.000 (-0.15)	0.004 (1.08)	-0.002 (-0.33)	0.000 (0.18)
Constant	<b>0.768</b> (22.04)	<b>0.094</b> (5.85)	<b>-0.260</b> (-8.50)	-0.020 (-1.13)	<b>0.274</b> (9.43)	<b>0.430</b> (12.97)	<b>-0.028</b> (-3.73)
N	1,849	1,849	1,849	1,849	1,849	1,849	1,849
R-squared	0.157	0.037	0.091	0.043	0.076	0.074	0.041
Elasticity	0.645	0.974	1.613	1.118	0.914	0.682	1.702



# Ex-ante predictions of program impact on expenditure shares

- % change in spending in category  $i = 20 * E_i$
- Ex-ante predicted impact = (% change in spending in category  $i$ ) \* (mean spending at baseline in category  $i$ )



# Table 4. Ex-ante predictions of program impact on expenditure shares, hh categories

## Panel A. Broad household item groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Food	Domestic	Health	Transprt&Comm	Housing	Education	Clothing	Other	Alc & Tobacco	Total
Pooled elasticity	0.871	0.836	1.176	1.725	0.886	1.568	1.475	2.175	1.058	
% change in ADJEXP	20	20	20	20	20	20	20	20	20	
% change in spending on group	17.42	16.72	23.52	34.5	17.72	31.36	29.5	43.5	21.16	
mean spending at baseline	858.74	207.00	85.49	101.15	34.64	78.18	54.05	8.99	7.08	
Ex-ante predicted impact	149.593	34.611	20.107	34.895	6.139	24.516	15.944	3.911	1.499	291.215
Actual DD impact estimate	<b>132.325</b> (36.554)	11.539 (9.697)	<b>34.59</b> (13.407)	<b>30.226</b> (11.761)	8.109 (5.100)	8.907 (11.275)	<b>24.2</b> (6.779)	-4.1 (4.362)	-3.712 (2.196)	242.084
Treatment only elasticity	0.886	0.850	1.120	1.642	0.775	1.593	1.526	2.131	1.357	
% change in ADJEXP	20	20	20	20	20	20	20	20	20	
% change in spending on group	17.720	17.000	22.400	32.840	15.500	31.860	30.520	42.620	27.140	
mean spending at baseline	858.744	207.005	85.487	101.146	34.642	78.18	54.05	8.990	7.084	
Ex-ante predicted impact	152.169	35.191	19.149	33.216	5.370	24.907	16.496	3.832	1.923	292.252
Actual DD impact estimate	<b>132.325</b> (36.554)	11.539 (9.697)	<b>34.590</b> (13.407)	<b>30.226</b> (11.761)	8.109 (5.100)	8.907 (11.275)	<b>24.200</b> (6.779)	-4.100 (4.362)	-3.712 (2.196)	242.084

Note: Standard errors of DD coefficient estimates in parentheses.



# Table 4. Ex-ante predictions of program impact on expenditure shares, food groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cereal	Tubers	Meat & Fish	Dairy	Fruit & Veg	Oth foods	Eaten Out	Total
Pooled elasticity	0.645	0.974	1.613	1.118	0.914	0.682	1.702	
% change in ADJEXP	20.00	20.00	20.00	20.00	20.00	20.00	20.00	
% change in spending on group	12.90	19.48	32.26	22.36	18.28	13.64	34.04	
mean spending at baseline	268.79	53.50	122.17	48.14	188.29	168.50	9.38	
Ex-ante predicted impact	34.674	10.422	39.411	10.765	34.419	22.984	3.192	155.867
Actual DD impact estimate	<b>46.833</b> (14.455)	<b>-13.926</b> (3.46)	<b>40.856</b> (12.306)	<b>29.653</b> (6.101)	6.535 (10.21)	<b>18.765</b> (9.290)	1.552 (3.167)	137.659
Treatment only elasticity	0.673	0.907	1.610	1.116	0.941	0.700	1.484	
% change in ADJEXP	20.00	20.00	20.00	20.00	20.00	20.00	20.00	
% change in spending on group	13.46	18.14	32.20	22.32	18.82	14.00	29.68	
mean spending at baseline	268.79	53.50	122.17	48.14	188.29	168.50	9.38	
Ex-ante predicted impact	36.179	9.705	39.338	10.745	35.436	23.591	2.783	157.777
Actual DD impact estimate	<b>46.833</b> (14.455)	<b>-13.926</b> (3.46)	<b>40.856</b> (12.306)	<b>29.653</b> (6.101)	6.535 (10.21)	<b>18.765</b> (9.290)	1.552 (3.167)	137.659



# 4. Testing for Elasticity Changes

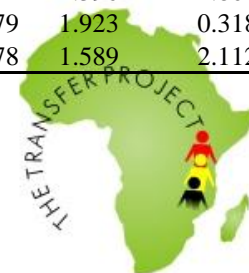
- Formal tests are based on differences in marginal propensities to consume since that is what drives the differences in elasticities.
- Difference-in-difference-in-differences estimator (DDD)
- $w_i = \alpha + \beta_1 X_1 + \beta_2 \ln ADJEXP + \beta_3 treat + \beta_4 time + \beta_5 (treat * time) + \beta_6 (\ln ADJEXP * treat) + \beta_7 (\ln ADJEXP * time) + \beta_8 (\ln ADJEXP * treat * time) + \varepsilon_i$



# Table 5. Estimates of Program Impacts on Expenditures Shares, Triple Differences

<b>Panel A. Broad household item groups</b>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Food	Domestic	Health	Transprt&Comm	Housing	Education	Clothing	Other	Alc & Tobacco
lnADJEXP ( $\beta_2$ )	<b>-0.020</b>	<b>-0.028</b>	<b>0.019</b>	<b>0.059</b>	0.005	0.028	0.006	<b>0.005</b>	<b>-0.003</b>
	(-8.59)	(-5.08)	(3.58)	(11.78)	(1.45)	(4.89)	(1.72)	(2.39)	(-2.25)
Treat ( $\beta_3$ )	-0.031	-0.048	0.074	<b>0.155</b>	<b>0.072</b>	0.036	<b>-0.081</b>	0.006	<b>-0.033</b>
	(-1.57)	(-1.03)	(1.67)	(3.67)	(2.58)	(0.74)	(-2.62)	(0.34)	(-2.86)
Time ( $\beta_4$ )	<b>-0.131</b>	<b>-0.146</b>	<b>0.116</b>	<b>0.273</b>	0.055	<b>0.204</b>	-0.043	-0.005	<b>-0.045</b>
	(-5.57)	(-2.66)	(2.22)	(5.47)	(1.65)	(3.59)	(-1.17)	(-0.23)	(-3.34)
Treat*Time ( $\beta_5$ )	<b>0.062</b>	<b>0.188</b>	<b>-0.173</b>	<b>-0.198</b>	<b>-0.111</b>	-0.109	0.071	0.013	<b>0.044</b>
	(2.15)	(2.78)	(-2.71)	(-3.21)	(-2.73)	(-1.56)	(1.58)	(0.50)	(2.65)
lnPCE*Treat ( $\beta_6$ )	0.004	0.006	<b>-0.012</b>	<b>-0.023</b>	<b>-0.010</b>	-0.004	<b>0.012</b>	-0.001	<b>0.005</b>
	(1.52)	(1.00)	(-1.96)	(-3.84)	(-2.43)	(-0.61)	(2.68)	(-0.30)	(2.89)
lnPCE*Time ( $\beta_7$ )	<b>0.017</b>	0.014	<b>-0.016</b>	<b>-0.042</b>	-0.009	<b>-0.029</b>	0.005	0.002	<b>0.006</b>
	(5.19)	(1.86)	(-2.13)	(-5.99)	(-1.94)	(-3.61)	(1.03)	(0.57)	(3.22)
lnPCE*Treat*Time ( $\beta_8$ )	<b>-0.008</b>	<b>-0.026</b>	<b>0.025</b>	<b>0.028</b>	<b>0.015</b>	0.015	-0.008	-0.002	<b>-0.006</b>
	(-2.08)	(-2.77)	(2.76)	(3.28)	(2.69)	(1.49)	(-1.34)	(-0.61)	(-2.76)
Constant	<b>0.211</b>	<b>0.419</b>	-0.072	<b>-0.382</b>	-0.014	<b>-0.218</b>	-0.037	<b>-0.036</b>	<b>0.028</b>
	(12.11)	(10.30)	(-1.87)	(-10.36)	(-0.56)	(-5.19)	(-1.36)	(-2.30)	(2.82)
Observations	3,697	3,697	3,697	3,697	3,697	3,697	3,697	3,697	3,697
R-squared	0.086	0.147	0.024	0.105	0.027	0.081	0.053	0.133	0.025
Treatment elasticity, baseline	0.974	0.858	1.119	1.594	0.818	1.466	1.543	1.957	1.350
Treatment elasticity, follow-up	0.989	0.674	1.239	1.512	1.103	1.189	1.352	1.396	1.801
Control elasticity, baseline	0.966	0.814	1.281	1.839	1.207	1.613	1.179	1.923	0.318
Control elasticity, follow-up	0.995	0.871	1.043	1.362	0.680	0.979	1.378	1.589	2.112

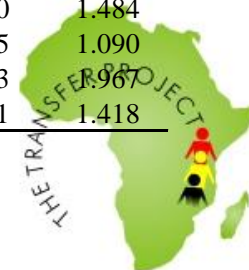
Note: t-statistics in parentheses.



# Table 5. Estimates of Program Impacts on Expenditures Shares, Triple Differences

<b>Panel B. Food groups</b>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Cereal	Tubers	Meat & Fish	Dairy	Fruit & Veg	Oth foods	Eaten Out
lnADJEXP ( $\beta_2$ )	<b>-0.065</b> (-8.26)	<b>-0.007</b> (-3.02)	<b>0.035</b> (6.09)	0.005 (1.46)	<b>-0.017</b> (-3.13)	<b>-0.047</b> (-8.33)	<b>0.005</b> (3.25)
Treat ( $\beta_3$ )	0.028 (0.43)	-0.033 (-1.63)	-0.062 (-1.26)	0.007 (0.26)	-0.075 (-1.59)	-0.065 (-1.36)	0.017 (1.30)
Time ( $\beta_4$ )	0.114 (1.45)	<b>-0.050</b> (-2.12)	-0.001 (-0.01)	-0.065 (-1.94)	-0.056 (-1.00)	<b>-0.327</b> (-5.82)	0.016 (0.99)
Treat*Time ( $\beta_5$ )	-0.070 (-0.73)	0.029 (0.98)	0.112 (1.57)	-0.074 (-1.78)	0.130 (1.89)	<b>0.146</b> (2.11)	0.001 (0.06)
lnPCE*Treat ( $\beta_6$ )	-0.003 (-0.36)	<b>0.006</b> (1.99)	0.008 (1.15)	-0.001 (-0.28)	0.011 (1.70)	0.009 (1.30)	-0.002 (-1.29)
lnPCE*Time ( $\beta_7$ )	-0.003 (-0.28)	0.004 (1.20)	-0.001 (-0.12)	0.009 (1.89)	0.010 (1.23)	<b>0.043</b> (5.53)	-0.002 (-0.81)
lnPCE*Treat*Time ( $\beta_8$ )	0.009 (0.64)	-0.005 (-1.30)	-0.014 (-1.37)	<b>0.011</b> (1.98)	<b>-0.020</b> (-2.07)	<b>-0.020</b> (-2.09)	-0.000 (-0.05)
Constant	<b>0.682</b> (11.79)	<b>0.094</b> (5.40)	<b>-0.184</b> (-4.30)	-0.025 (-1.02)	<b>0.307</b> (7.44)	<b>0.477</b> (11.51)	<b>-0.034</b> (-2.94)
Observations	3,697	3,697	3,697	3,697	3,697	3,697	3,697
R-squared	0.205	0.183	0.084	0.060	0.051	0.069	0.027
Treatment elasticity, baseline	0.673	0.959	1.610	1.116	0.954	0.700	1.484
Treatment elasticity, follow-up	0.774	0.559	1.339	1.566	0.874	0.865	1.090
Control elasticity, baseline	0.680	0.758	1.470	1.139	0.858	0.643	0.967
Control elasticity, follow-up	0.769	0.575	1.502	1.427	0.941	0.971	1.418

Note: t-statistics in parentheses.



# Table 6. Estimates of Program Impacts on Expenditures Shares, Triple Differences, by HH size

## Panel A. Broad household item groups

Sample	lnPCE*Treat*Time ( $\beta_8$ )								
	(1) Food	(2) Domestic	(3) Health	(4) Transprt&Comm	(5) Housing	(6) Education	(7) Clothing	(8) Other	(9) Alc & Tobacco
Pooled	<b>-0.008</b> (-2.08)	<b>-0.026</b> (-2.77)	<b>0.025</b> (2.76)	<b>0.028</b> (3.28)	<b>0.015</b> (2.69)	0.015 (1.49)	-0.008 (-1.34)	-0.002 (-0.61)	<b>-0.006</b> (-2.76)
Small HH	-0.009 (-1.23)	-0.033 (-1.72)	<b>0.049</b> (2.93)	0.016 (1.07)	<b>0.025</b> (2.48)	0.000 (0.03)	<b>-0.025</b> (-2.80)	0.003 (0.49)	0.003 (0.93)
Large HH	-0.009 (-1.75)	-0.019 (-1.70)	0.012 (1.06)	<b>0.036</b> (3.26)	0.011 (1.58)	0.022 (1.71)	-0.009 (-0.96)	-0.002 (-0.50)	<b>-0.011</b> (-3.48)

## Panel B. Food groups

Sample	lnPCE*Treat*Time ( $\beta_8$ )						
	(1) Cereal	(2) Tubers	(3) Meat & Fish	(4) Dairy	(5) Fruit & Veg	(6) Oth foods	(7) Eaten Out
Pooled	0.009 (0.64)	-0.005 (-1.30)	-0.014 (-1.37)	<b>0.011</b> (1.98)	<b>-0.020</b> (-2.07)	<b>-0.020</b> (-2.09)	-0.000 (-0.05)
Small HH	0.031 (1.34)	0.002 (0.19)	-0.027 (-1.50)	0.004 (0.44)	-0.025 (-1.37)	-0.029 (-1.83)	0.001 (0.33)
Large HH	-0.009 (-0.49)	-0.002 (-0.46)	-0.010 (-0.82)	0.015 (1.94)	-0.011 (-0.94)	-0.019 (-1.48)	-0.002 (-0.50)





# Conclusions

- As a result of the program, participating households have significantly higher expenditures than control households in four of the nine household item categories.
- We also see positive program impacts on spending in four of the seven food groups.
- The main contribution of this paper is our in-depth analysis of whether the program has shifted underlying preferences.
- As evidenced by the DDD results, the program appears to have impacts beyond simple income effects (movements along the Engel Curve) and has caused preferences to shift (a shifting of the Engel Curve) for some goods, including health and alcohol and tobacco



# Next steps

- Investigate why the program induced such a large increase in health expenditures, especially over a period when health expenditures in control households were decreasing.
- May indicate more forward thinking.
- We can also compare savings (at follow-up only) between T and C households to verify the hypothesis that the program has induced a change in time preference.
- 2011 data: module on time preference and discount rate.



# References

- Deaton, A., & Muellbauer, J. (1980). *Economics and Consumer Behavior*. Cambridge: Cambridge University Press.



# Thank you

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Extra slides



# Proportion of HH with positive spending, broad HH groups

	(1)	(2)	(3)	(4)	(5)
	Treatment		Control		
	Wave 1	Wave 2	Wave 1	Wave 2	
	Proportion w/ Positive Spending				
Food	1.00	1.00	1.00	0.99	0.32
Domestic	0.99	1.00	1.00	1.00	0.12
Health, Hygiene	0.94	0.99	0.95	0.99	0.34
Trnspt, Communication	0.70	0.80	0.73	0.76	0.11
Housing	0.38	0.32	0.31	0.31	<b>0.01</b>
Education	0.83	0.96	0.87	0.94	0.05
Clothing	0.60	0.89	0.66	0.71	<b>0.01</b>
Other	0.18	0.22	0.22	0.19	0.08
Alcohol, Tobacco	0.09	0.06	0.07	0.07	0.15

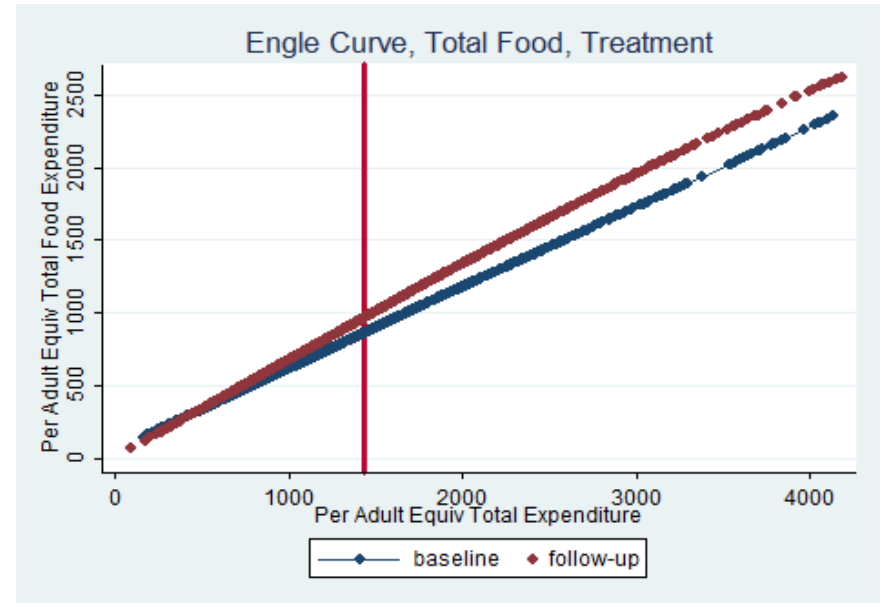
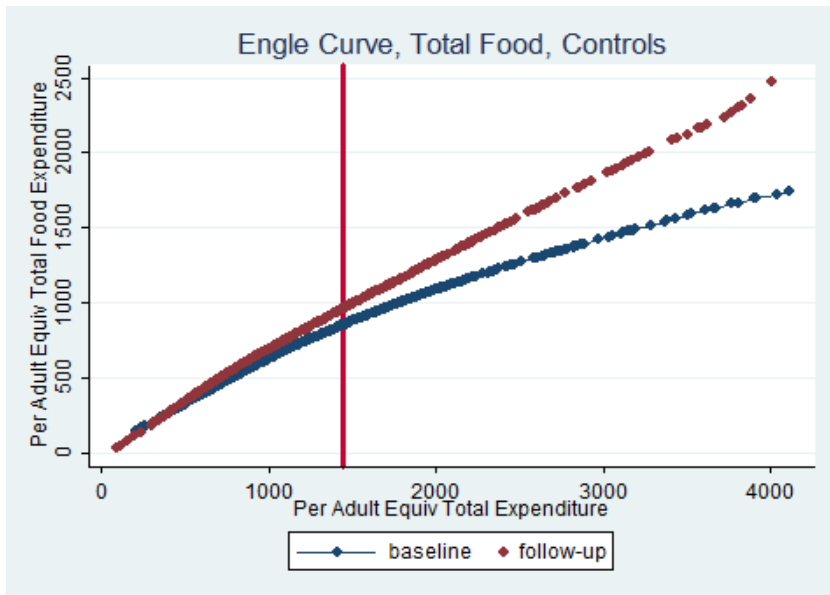


# Proportion of HH with positive spending, food groups

	(1)	(2)		(3)	(4)	(5)
	Treatment			Control		
	Wave 1	Wave 2		Wave 1	Wave 2	
	Proportion w/ Positive Spending					
Cereals	1.00	1.00		1.00	0.99	0.29
Tubers	0.66	0.56		0.61	0.53	0.08
Meat, Fish	0.59	0.79		0.67	0.72	<b>0.00</b>
Dairy	0.53	0.70		0.57	0.56	0.09
Fruit, Vegetables	0.93	0.98		0.93	0.95	0.99
Other Food	0.99	0.99		0.99	0.99	0.74
Food Eaten Out	0.15	0.30		0.19	0.24	<b>0.03</b>



# Engel Curves





# Engel Curves

