14.771 Development Economics: Microeconomic issues and Policy Models
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Testing Household Models

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14.771

Outline

- Is the household unitary?
- Is the household efficient?
- What next?

Is the Household Unitary?

- Do things other than prices and overall resources ("distribution factors") enter in the production function
- Most tests are test of "income pooling": Does the identity of a transfer recipient matter?
- Other things can influence distribution inside the household:
    - Divorce Laws (Chiappori-Fortin-Lacroix)
    - Marriage markets (Angrist; Lafortune)
    - Labor market
    - Assets brought to the wedding and that spouse retains control of (Thomas-Frankenberg-Contreras)

Testing for income pooling

- Large literature testing for income pooling (Duncan Thomas)
  You may want to run:

$$z_i = \alpha + \beta y_i^f + \gamma y_i^m + X_i \beta + \epsilon_i$$

  for some outcome z_i, y_i^f is female income, y_i^m male income.
- A number of empirical difficulties with this regression:
  - Joint determination of incomes and consumption: Thomas proposes to use "unearned income" instead.
  - Omitted variables
    - Individual level omitted variables
    - Marriage market: distribution of income reveals something on the spouse

A test of income pooling: Duflo, 2000

- Ideal experiment: an unexpected permanent transfer occurring after marriage (e.g. random allocation of CCT transfers to women or to men: ongoing in Morocco)
- Old Age Pension in South Africa is an approximation:
  - Small extended to Black After the end of Apartheid (1991)
  - Men above 65 and Women above 60 are eligible conditional on a loosely applied means test: 85% of age eligible people are getting it
  - Twice median income per capital in rural areas when it started
  - Many old persons live in 3 generations households, one third of children 0 to 5 lived with a pension recipient in 1993
- Question: Was money spent differently in a household if it was received by a man vs a woman.

Empirical strategy

- Outcome of interest: Children's weight-for-age and height-for-age
- Children who live with pensioners live in different households than those who don't (extended families are poorer, more rural, etc.).
- This may also differ for female vs male.
- Two strategies:
  - "Regression Discontinuity Design" using the age cutoffs for pension recipient for weight-for-height
  - Difference-in-difference for the height-for-age

Weight for height

- Weight for height is flow measure of nutrition, will respond fast to any change in nutrition level
- Idea: Compare children living in 3 generation households with grandmothers eligible vs just a little too young to be eligible; Same thing for grandfathers

$$w_{ijk} = \pi_f E_f + \pi_m E_m + \sum_{j=1}^{4} \gamma_l \mathbf{1}_{(l=k)} + W_{ijk}\lambda + X_{ijk}\delta + \omega_{ijk} \quad (1)$$

- ▸ Results
  - Positive impact of grandmother pension on girls, no effect of grandfather's pension
  - ▸ Mother's mother pension matters

Height for Age

- Potential problems with Weight for age regressions:
  - Remaining differences between families
  - Endogenous family composition
- Height for age is a stock measure of nutrition, will respond slowly, and no catch up till later of growth deficit in early childhood
- Idea: use the older children as control for younger children in a DD framework: is there a bigger difference between older and younger children in households that are
- ▸ Graphs
- Regression:

$$h_{ijk} = \pi_f(YOUNG * E_f) + \pi_m(YOUNG * E_m) + \beta_f E_f + \beta_m E_m + \sum_{l=1}^{4} \gamma_j 1_{(l=k)} + X_{ijk}\delta + \sum_{l=1}^{4} 1_{(l=k)} * X_{ijk}\lambda_j + \epsilon_{ikk} \quad (2)$$

- ▸ Results similar as for weight for height.

Household Efficiency: Ratio tests

- Thomas, Frankenberg, Contreras (2002)
- You have seen the theory beyond these types of test in the previous lecture
- Take two measures of child health, ϕ_k and ϕ'_k, and let A_1 the asset that the wife took to the marriage and A_2 the asset that the husband took to the marriage
- Efficient implies:

$$\frac{\frac{\partial \phi_k}{\partial A_1}}{\frac{\partial \phi_k}{\partial A_2}} = \frac{\frac{\partial \phi_{k'}}{\partial A_1}}{\frac{\partial \phi_{k'}}{\partial A_2}} \quad (3)$$

- Results: Coefficients estimates and Ratio Tests
- No rejection
- Limits of these types of tests:
  - Inherit all the income pooling problems
  - Power (power of overid test to reject is low)

Household Efficiency: Production Efficiency

- Udry (1996)
- Intuition: Separability results: An efficient household should maximize the resources available, and *then* share them.
- Burkina Faso: women and men farm different plot
- Prediction of efficiency: conditioning for the type of crops farmed on each farm, and the productivity of the plot, the yield on women's and men's plots should be the same
- Test this prediction and strongly reject: Output Inputs
- This seems to be coming at least in part from much lower use of inputs on women's farm.
- Obvious ways to reconcile with efficiency do not seem to explain the results away

- What is the likely source of violation of efficiency here?
  - Household looks at *income* brought by each household member (rather than potential income). Household member invest to increase their *share* of the income (not only maximize total pie), to influence their bargaining power.
  - Note that this means that husband should buy out the wife (and promise her a utility stream to compensate her).
- Other setting where this “buying out” policy would be efficient: Goldstein-Udry (women are less likely to fallow their land because their property rights are not very secure).

Household Efficiency: Insurance

- Another prediction of a pareto efficient household is that household members should insure each other
- In other words, the pareto weights should not fluctuate with year to year variation in income.
- Women and Men (tend to) grow different crop, on their different farm.
- A special crop is Yam, which is to be used by men for household public goods.
- We can compute proxies for male and female income (and yam income) by aggregating crop income across different crops.
- Haddad and Hodinott run:

$$log(c_{it}) = \alpha + \beta y_{fit} + \gamma y_{mit} + \delta y_{yit} + \epsilon_{it}$$

what are the various reasons why we may expect β and γ to differ?

- I first predict $y_{si2} - y_{si1}$, for s in $\{m, f, y\}$ as a function of rainfall ▸ First Stage and form predicted value of those difference $\hat{\Delta} y_{si} = y_{si2} - y_{si1}$, and I run

$$\Delta(log(c_i)) = \alpha + \beta\hat{\Delta} y_{fi} + \gamma\hat{\Delta} y_{mi} + \delta\hat{\Delta} y_{yi} + \epsilon_i$$

  in a Pareto-efficient model, why would the coefficient β, γ and δ differ?
- What test of Pareto-efficiency does this suggest?
- Consumption of particular goods should change only to the extent that total expenditure changes.
- Two steps:
  1. Run the same regression with total expenditures are the dependent variable

$$\Delta(log(x_i)) = \pi_1 + \pi_2\hat{\Delta} y_{fi} + \pi_3\hat{\Delta} y_{mi} + \pi_4\hat{\Delta} y_{yi} + \epsilon_i$$

  2. calculate the ratios: $\frac{\beta}{\pi_1}$, $\frac{\gamma}{\pi_2}$, $\frac{\delta}{\pi_3}$. They should all be equal.

Results Interpretation

- ▸ Results Rejection of equality of ratio
- Does not seem to be explained by obvious failure of identification
- Is this a labor market failure?
- Can this be due to lack of observability of the output?
- Can this be due to moral Hazard?
- Why do household keep separate mental account?
  - Incomplete contracting in the household: constant negotiations of what transfers should be in a given period are very difficult.
  - Households members decide instead of very simple rules they follow, and would be subject to strong punishment if they re-negociated upon. This allows for insurance against mis-behavior (and perhaps avoids the unpleasantness of negociating).

Duflo (2003)

Effect of the Old Age Pension Program on Weight for Height: Ordinary Least Squares and Two-Stage Least Squares Regressions

Variable	*Ordinary least squares*						*Two-stage least squares*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Girls							
Eligible household	0.14 (0.12)	0.35* (0.17)	0.34* (0.17)				
Woman eligible				0.24* (0.12)	0.61* (0.19)	0.61* (0.19)	1.19* (0.41)
Man eligible				-0.011 (0.22)	0.11 (0.28)	0.056 (0.19)	-0.097 (0.74)
Observations	1,574	1,574	1,533	1,574	1,574	1,533	1,533
Boys							
Eligible household	0.0012 (0.13)	0.022 (0.22)	0.030 (0.24)				
Woman eligible				0.066 (0.14)	0.28 (0.28)	0.31 (0.28)	0.58 (0.53)
Man eligible				-0.059 (0.22)	-0.25 (0.34)	-0.25 (0.35)	-0.69 (0.91)
Observations	1,670	1,670	1,627	1,670	1,670	1,627	1,627
Control variables							
Presence of older members	No	Yes	Yes	No	Yes	Yes	Yes
Family background variables	No	No	Yes	No	No	Yes	Yes
Child age dummy variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes

** Significant at the five percent level*

Note: The instruments in column 7 are woman eligible and man eligible. Standard errors (robust to correlation of residuals within house holds and heteroskedasticity) are in parentheses.

Figure by MIT OpenCourseWare.

Duflo (2003)

Effect of Pension Eligibility on Weight for Height by Gender of the Intermediate Generation: Ordinary Least Squares Regressions

Variable	*Girls*	*Boys*
Mother's mother Eligible	0.48* (0.21)	0.099 (0.27)
Father's mother Eligible	0.15 (0.25)	0.29 (0.30)
Mother's father Eligible	0.097 (0.34)	0.00052 (0.43)
Father's father Eligible	0.22 (0.48)	0.25 (0.44)
Observations	1,457	1,552
Control variables		
Presence of older members	Yes	Yes
Family background variables	Yes	Yes
Age dummy variables	Yes	Yes

* *Significant at the five percent level.*

Note: Standard errors (robust to correlation of residuals within households and heteroskedasticity) are in parentheses.

Figure by MIT OpenCourseWare.

	Treatment variable			
	Eligibility	*Eligibility*	*Old grandparent*	*Receives pension*
	Ordinary least squares			*Two-stage least squares*
	(1)	*(2)*	*(3)*	*(4)*
Girls				
Eligible household * YOUNG	0.68* (0.37)			
Woman treatment variable * YOUNG		0.71* (0.34)	0.40 (0.27)	1.16* (0.56)
Man treatment variable * YOUNG		0.097 (0.57)	-0.12 (0.35)	-0.071 (0.95)
Eligible household	-0.17 (0.16)			
Woman pension variable		-0.15 (0.17)	-0.039 (0.13)	-0.15 (0.17)
Man pension variable		-0.11 (0.24)	0.027 (0.15)	-0.11 (0.24)
Observations	1,533	1,533	1,533	1,533

Figure by MIT OpenCourseWare.

Duflo (2003)

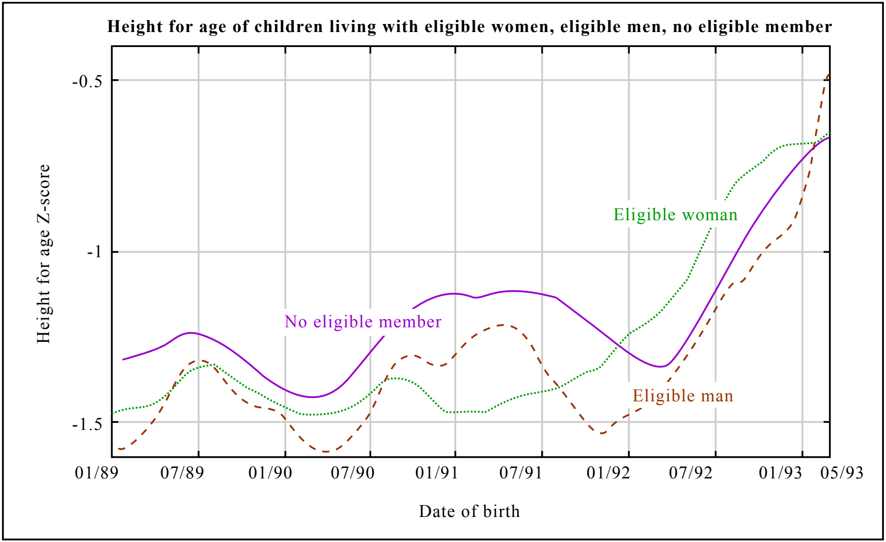

Figure by MIT OpenCourseWare.

Thomas, Frankenberg, and Conteras (2002)

Impact of Parental Assets at Marriage on Child Morbidity: OLS and Fixed Effects Estimates (*100) Java and Sumatra

	Sons	Daughters	Difference	
			OLS	*Fixed effects*
Cough				
Paternal assets at marriage	0.135 [2.60]	0.011 [0.14]	0.124 [1.30]	0.119 [1.37]
Maternal assets at marriage	-0.093 [1.09]	0.143 [1.53]	-0.237 [1.86]	-0.236 [2.78]
χ^2(asset effects=0)	3.90 [0.02]	1.21 [0.30]	2.42 [0.09]	4.73 [0.01]
χ^2(asset effects equal)	5.08 [0.02]	1.04 [0.31]	4.82 [0.03]	8.36 [0.00]
F (all covariates)	10.46 [0.00]	2.60 [0.00]	7.10 [0.00]	2.78 [0.00]
R^2	0.096	0.085	0.091	0.686
Fever				
Paternal assets at marriage	0.068 [0.74]	0.075 [0.90]	-0.007 [0.05]	-0.026 [0.25]
Maternal assets at marriage	0.029 [0.33]	0.224 [2.44]	-0.195 [1.53]	-0.186 [2.48]
χ^2(asset effects=0)	0.36 [0.70]	3.67 [0.03]	1.20 [0.30]	3.21 [0.04]
χ^2(asset effects equal)	0.09 [0.77]	1.29 [0.26]	1.01 [0.32]	1.46 [0.23]
F (all covariates)	5.50 [0.00]	3.01 [0.00]	4.50 [0.00]	2.53 [0.00]
R^2	0.080	0.083	0.082	0.655

Notes: Sample size: 601 sibling pairs. Standard errors below coefficient estimates; p-values below test statistics. Variance-covariances matrices computed by method of infinitesimal jackknife.

Figure by MIT OpenCourseWare.

Thomas, Frankenberg, and Conteras (2002)

Impact of Parental Assets at Marriage on Child Morbidity: OLS and Fixed Effects Estimates (*100)
Java and Sumatra

	Sons	*Daughters*	*Difference*	
			OLS	*Fixed effects*
Diarrhea				
Paternal assets at marriage	-0.002 [0.03]	0.072 [0.85]	-0.074 [0.69]	-0.079 [1.39]
Maternal assets at marriage	-0.042 [1.13]	-0.018 [0.45]	-0.024 [0.43]	-0.017 [0.42]
χ^2(asset effects=0)	0.64 [0.53]	0.45 [0.64]	0.320 [0.73]	0.980 [0.38]
χ^2(asset effects equal)	0.29 [0.59]	0.89 [0.35]	0.170 [0.68]	0.970 [0.33]
F (all covariates)	2.59 [0.00]	1.87 [0.01]	2.180 [0.00]	2.030 [0.00]
R^2	0.071	0.062	0.067	0.682
Other				
Paternal assets at marriage	0.066 [1.05]	0.096 [1.19]	-0.030 [0.30]	-0.063 [0.61]
Maternal assets at marriage	0.066 [1.24]	-0.023 [0.31]	0.089 [0.97]	0.110 [1.57]
χ^2(asset effects=0)	1.31 [0.27]	0.73 [0.48]	0.500 [0.61]	1.340 [0.26]
χ^2(asset effects equal)	0.00 [1.00]	1.08 [0.30]	0.720 [0.40]	1.750 [0.19]
F (all covariates)	6.80 [0.00]	2.52 [0.00]	4.570 [0.00]	1.910 [0.00]
R^2	0.081	0.044	0.064	0.684

Notes: Sample size: 601 sibling pairs. Standard errors below coefficient estimates; p-values below test statistics. Variance-covariances matrices computed by method of infinitesimal jackknife.

Figure by MIT OpenCourseWare.

Thomas, Frankenberg, and Conteras (2002)

Tests for Pareto Efficiency in Household Allocations
Java and Sumatra
Ratio of Effects of Paternal to Maternal Assets at
Marriage and Non Linear Wald Tests for Equality of Ratios

Ratios of asset effects: α_1/α_2	
Cough	-0.50
Fever	0.14
Diarrhea	4.65
Other	-0.57

Pair-wise tests for equality of ratios: $\chi^2{}_1$

	Fever	*Diarrhea*	*Other*
Cough	0.90 [0.14]	1.44 [0.23]	0.00 [0.96]
Fever		1.43 [0.23]	0.41 [0.52]
Diarrhea			1.10 [0.29]

Joint tests for equality of all ratios: $\chi^2{}_5$

	2.52 [0.77]	

Notes: P-values below test statistics. Variance-covariances matrices computed by method of infinitesimal jackknife.

Figure by MIT OpenCourseWare.

Udry (1996)

OLS Fixed-Effect Estimates of the Determinants of Plot Yield and Ln(Plot Output) (x 1,000 FCFA)
Dependent Variable: Value of Plot Output/Hectare

	Household-year-crop effects: all crops (1)		*Household-year effects*				*Household-crop-year effects*			
			Millet only (2)		*White sorghum* (3)		*Vegetables* (4)		*All crops: CES** (5)	
Mean of dependent variable	89		31		41		134		1.67	
Gender: (1 = female)	-27.70	(-4.61)	-10.36	(-2.53)	-19.38	(-4.43)	-34.27	(-2.21)	-.20	(-3.56)
Plot size:										
1st decile	133.99	(3.50)	-28.35	(-2.67)	-17.90	(-1.92)	237.10	(4.66)		
2d decile	69.10	(4.38)	8.64	(.82)	52.30	(3.16)	63.97	(2.38)		
3d decile	63.45	(5.52)	16.95	(1.81)	47.68	(4.77)	35.87	(1.52)		
4th decile	34.08	(2.88)	9.79	(1.12)	26.73	(3.12)	4.21	(.18)		
6th decile	-2.04	(-.29)	-.99	(-.11)	-6.38	(-1.16)	-6.65	(-.26)		
7th decile	-13.44	(-1.78)	-13.01	(-1.73)	-11.31	(-1.69)	-33.54	(-.90)		
8th decile	-17.23	(-2.59)	-12.97	(-1.34)	-28.58	(-4.82)	31.04	(.73)		
9th decile	-26.68	(-3.81)	-21.50	(-2.65)	-28.65	(-4.98)				
10th decile	-31.52	(-4.49)	-20.56	(-2.55)	-37.70	(-6.03)				
Ln(area)									.78	(29.52)
Toposequence:										
Uppermost	-41.35	(-2.18)	2.50	(.24)	-14.60	(-1.73)	-131.34	(-1.82)	-.46	(-2.71)
Top of slope	-26.35	(-1.27)	9.53	(.96)	-11.27	(-1.47)	-121.05	(-1.85)	-.29	(-1.92)
Mid-slope	-24.38	(-1.19)	5.39	(.64)	-8.62	(-1.15)	-119.68	(-1.88)	-.28	(-1.97)
Near bottom	-21.70	(-.90)	4.48	(.40)	-5.36	(-.71)	-93.96	(-1.30)	-.18	(-1.27)

Figure by MIT OpenCourseWare.

Udry (1996)

Least-Squares Tobit Fixed-Effect Estimates of the Determinants of Plot Input Intensities

	Household-year-crop effects									
	Male labor per hectare (1)		*Female labor per hectare (2)*		*Child labor per hectare (3)*		*Nonhousehold labor per hectare (4)*		*Manure (1,000) kg per hectare (5)*	
Gender: (1 = female)	-668.47	(-9.60)	70.23	(1.53)	-195.46	(-2.34)	-428.41	(-1.70)	-16.33	(-2.54)
Plot size:										
1st decile	1,209.72	(2.53)	1,462.21	(5.71)	740.80	(1.17)	193.35	(.43)	24.79	(2.42)
2d decile	417.18	(3.25)	1,131.01	(5.82)	143.12	(1.11)	487.39	(1.28)	7.99	(.96)
3d decile	245.94	(2.74)	799.12	(6.72)	133.16	(1.53)	689.39	(1.27)	2.58	(.48)
4th decile	96.53	(1.71)	407.87	(5.02)	72.51	(.68)	378.18	(1.07)	-6.18	(-1.12)
6th decile	-.55	(-.01)	-69.25	(-1.36)	-72.15	(-.98)	57.48	(.80)	-2.14	(-.33)
7th decile	-153.12	(-2.97)	-306.51	(-5.96)	-59.53	(-.60)	65.51	(.64)	-11.08	(-1.54)
8th decile	-375.53	(-6.23)	-386.78	(-6.61)	-184.61	(-1.61)	-43.81	(-.30)	-11.01	(-1.61)
9th decile	-413.36	(-6.79)	-373.57	(-5.16)	-269.99	(-1.83)	-255.15	(-.87)	-11.64	(-1.80)
10th decile	-490.11	(-7.72)	-418.06	(-6.08)	-219.27	(-1.86)	-220.64	(-1.07)	-16.41	(-2.45)
Toposequence:										
Uppermost	41.62	(.35)	-1.92	(-.02)	-55.52	(-.51)	20.20	(.12)	-9.22	(-.62)
Top of slope	29.36	(.30)	91.02	(1.07)	35.15	(.38)	144.02	(.83)	.26	(.02)
Mid-slope	36.08	(.38)	.57	(.01)	.10	(.00)	-15.45	(-.11)	1.14	(.11)
Near bottom	16.42	(.18)	75.94	(.86)	-98.03	(-1.05)	23.27	(.17)	2.88	(-.27)
Soil types:										
3	103.49	(.60)	-31.68	(-.23)	235.74	(.86)	175.29	(.50)	-11.80	(-1.18)
7	-65.79	(-.85)	-30.39	(-.28)	21.88	(.44)	66.04	(.47)	-.07	(-.01)
11	-28.77	(-.09)	-52.06	(-.34)	-778.86	(-4.36)	262.71	(.70)	-.70	(-.08)
12	1,051.98	(.82)	367.34	(1.63)	62.36	(.44)	368.47	(1.13)	16.32	(1.48)
13	274.48	(1.33)	-38.50	(-.29)			-187.07	(-.89)		
21	196.37	(.95)	-53.41	(-.49)	-42.87	(.35)	37.73	(.27)	2.86	(.18)
31	83.16	(1.59)	68.24	(.92)	205.90	(2.29)	115.56	(1.00)	6.43	(1.29)
32	24.77	(.50)	-10.36	(-.15)	173.14	(1.07)	51.08	(-.44)	.73	(.12)
33	250.40	(2.57)	163.76	(1.36)	206.68	(.78)	-113.72	(-.37)	17.28	(1.61)
35	179.46	(1.50)	303.86	(1.90)	248.38	(2.60)	195.14	(.58)	-12.75	(-.94)
37	82.49	(.70)	50.84	(.30)	114.53	(1.19)	31.14	(.20)	8.34	(1.44)
45	78.13	(1.34)	-8.33	(-.10)	79.85	(1.02)	41.90	(.25)	8.00	(1.83)
46	-187.14	(-1.84)	141.73	(.76)	42.70	(.09)	223.23	(1.27)	-15.45	(-.79)
51	95.73	(1.83)	-27.01	(-.33)	2.93	(.05)	126.70	(1.05)	.80	(.17)
Location:										
Compound	35.35	(.78)	37.16	(.90)	-18.82	(-.31)	-162.88	(-1.38)	.99	(.24)
Village	19.69	(.70)	12.18	(.45)	42.92	(.93)	25.80	(.30)	5.86	(1.60)
Mean of dependent variable	427.39		466.18		85.55		84.88		1.70	
When > 0	506.62		517.17		202.88		213.11		7.78	

Note.- This is the least-squares implementation of Honoré's (1992) fixed-effect Tobit estimator. t-ratios are in parentheses.

Figure by MIT OpenCourseWare.

Table 2: First stage summary statistics

	Dependent variables		
	Male cash crop	Current Yam income	Female Income
	(1)	(2)	(3)
F statistics (p value)			
All rainfall variables are significant	1.99 (0.014)	3.50 (0.000)	2.53 (0.000)
Current year rainfall variables significant	1.18 (0.315)	3.38 (0.000)	2.43 (0.005)
Past year rainfall variables significant	2.79 (0.005)	4.64 (0.000)	2.64 (0.001)
Rainfall variables significantly different from:			
Male cash crop	NA		
Yam income	2.10 (0.010)	NA	
Female income	2.10 (0.009)	2.38 (0.002)	NA

Table 4: Restricted overidentification tests

	Dependent variable: Change in log (item consumption)											
	Total expenditure	Food consumption	Adult goods	Clothing	Prestige goods	Education	Staples	Meat	Vegetables	Processed foods	Purchased foods	Food consumed at home
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PANEL A												
OLS coefficients:												
Predicted change in male non-yam	0.126	0.062	0.870	-0.164	0.683	-0.101	0.113	0.002	0.345	0.004	-0.029	0.098
income	(0.049)	(0.054)	(0.425)	(0.334)	(0.209)	(0.128)	(0.072)	(0.126)	(0.210)	(0.139)	(0.078)	(0.119)
Predicted change in yam	0.207	0.227	-0.473	0.296	-0.272	0.320	0.345	0.135	0.023	0.122	0.087	0.444
income	(0.037)	(0.041)	(0.320)	(0.252)	(0.158)	(0.108)	(0.054)	(0.096)	(0.159)	(0.105)	(0.059)	(0.090)
Predicted change in female	0.309	0.235	1.537	0.535	0.993	-0.098	0.193	0.492	0.995	0.474	0.412	0.313
income	(0.056)	(0.061)	(0.490)	(0.382)	(0.239)	(0.159)	(0.082)	(0.144)	(0.239)	(0.159)	(0.089)	(0.136)
F tests (p value) :		0.934	5.064	0.514	7.595	2.260	5.870	1.824	3.277	1.397	4.777	1.912
Overidentification		(0.393)	(0.007)	(0.598)	(0.001)	(0.106)	(0.003)	(0.162)	(0.038)	(0.248)	(0.009)	(0.148)
Restriction test												
PANEL B: LAGGED RAINFALL												
OLS coefficients:												
Predicted change in lagged male	0.073	0.039	0.350	0.044	0.047	0.091	0.038	0.150	0.039	0.115	0.155	-0.007
non-yam income	(0.020)	(0.022)	(0.169)	(0.133)	(0.082)	(0.056)	(0.029)	(0.050)	(0.083)	(0.055)	(0.031)	(0.047)
Predicted change in lagged yam	-0.003	0.004	0.008	-0.125	-0.076	-0.031	-0.021	0.015	0.011	0.027	0.024	-0.018
income	(0.009)	(0.009)	(0.073)	(0.059)	(0.036)	(0.029)	(0.013)	(0.022)	(0.036)	(0.024)	(0.013)	(0.021)
Predicted change in lagged female	-0.001	0.018	-0.024	-0.251	-0.289	0.093	0.044	0.023	-0.054	-0.010	0.062	-0.035
income	(0.026)	(0.028)	(0.220)	(0.173)	(0.107)	(0.079)	(0.038)	(0.064)	(0.107)	(0.071)	(0.040)	(0.061)
F tests (p value) :		0.105	0.128	0.254	0.043	0.016	0.049	0.052	0.024	0.058	0.054	0.057
Overidentification		(0.900)	(0.880)	(0.776)	(0.958)	(0.984)	(0.952)	(0.949)	(0.976)	(0.943)	(0.948)	(0.945)