Appendix Table 1: GMM Estimates, Varying Covariates

			(1) Include Abuse		(2) Include Wealth		(3) Include both	
function	person	var	Estimate	*Std Err*	Estimate	*Std Err*	Estimate	*Std Err*
$\ln \delta$	all	const	0.135	*0.037*	0.159	*0.068*	0.191	*0.069*
η	men	const	0.302	*0.012*	0.298	*0.017*	0.323	*0.018*
		f	0.028	*0.005*	0.035	*0.005*	0.031	*0.006*
	women	const	0.306	*0.013*	0.25	*0.02*	0.241	*0.02*
		f	0.003	*0.004*	0.007	*0.004*	0.011	*0.005*
	children	const	0.392	*0.02*	0.452	*0.023*	0.435	*0.024*
		f	-0.03	*0.006*	-0.042	*0.007*	-0.042	*0.007*
Change	men		0.251	*0.056*	0.311	*0.094*	0.326	*0.097*
in	women		0.154	*0.046*	0.204	*0.081*	0.266	*0.091*
Welfare	children		0.056	*0.037*	0.064	*0.073*	0.094	*0.074*
N	ons		3000		3000		3000	
J: value	[df] p		194.6	*0.34*	180	*0.63*	182.4	*0.48*
			[187]		[187]		[182]	

Appendix Table 2
Number of parameters = 89
Number of moments = 315
Initial weight matrix: Unadjusted Number of obs = 3,000
GMM weight matrix: Cluster (uzcode)
(Std. Err. adjusted for 281 clusters in uzcode)

	Estimate	Robust Std. Err.		Estimate	Robust Std. Err.
eta_m			eta_f		
one	0.3082	0.0120	one	0.3299	0.0144
avg_age_men	-0.0022	0.0035	avg_age_men	0.0125	0.0040
avg_age_women	-0.0208	0.0049	avg_age_women	-0.0322	0.0054
avg_edu_men	0.0036	0.0015	avg_edu_men	0.0059	0.0014
avg_edu_women	0.0007	0.0019	avg_edu_women	-0.0026	0.0018
avg_age_children	-0.0341	0.0129	avg_age_children	-0.0559	0.0128
frac_girl	0.0559	0.0096	frac_girl	-0.0221	0.0093
ln_dowry	0.0030	0.0013	ln_dowry	-0.0011	0.0012
m1_f1_c1	0.0435	0.0193	m1_f1_c1	0.0078	0.0182
m1_f1_c3	-0.0506	0.0157	m1_f1_c3	-0.0651	0.0182
m1_f1_c4	-0.0052	0.0170	m1_f1_c4	-0.1040	0.0216
m1_f2_c1	0.0514	0.0159	m1_f2_c1	0.0986	0.0202
m1_f2_c2	-0.0512	0.0144	m1_f2_c2	0.1275	0.0218
m2_f1_c1	0.1232	0.0236	m2_f1_c1	-0.0451	0.0158
m2_f1_c2	0.1452	0.0236	m2_f1_c2	-0.0371	0.0178
m2_f2_c1	0.0826	0.0211	m2_f2_c1	0.1094	0.0206
m2_f2_c2	0.0461	0.0303	m2_f2_c2	0.1539	0.0319
f, cooperation	0.0269	0.0050	f, cooperation	-0.0052	0.0047
gamma_m			gamma_f		
one	0.3012	0.0139	one	0.2382	0.0123
avg_age_men	0.0030	0.0039	avg_age_men	-0.0055	0.0034
avg_age_women	0.0165	0.0062	avg_age_women	0.0234	0.0058
avg_edu_men	-0.0058	0.0017	avg_edu_men	-0.0057	0.0013
avg_edu_women	-0.0021	0.0019	avg_edu_women	0.0024	0.0018
avg_age_children	-0.0661	0.0121	avg_age_children	-0.0630	0.0096
frac_girl	-0.0391	0.0092	frac_girl	0.0333	0.0085
ln_dowry	-0.0022	0.0016	ln_dowry	0.0031	0.0010
m1_f1_c1	0.0063	0.0189	m1_f1_c1	0.0410	0.0156
m1_f1_c3	0.0220	0.0186	m1_f1_c3	0.0312	0.0183
m1_f1_c4	-0.0416	0.0188	m1_f1_c4	0.0542	0.0314
m1_f2_c1	-0.0730	0.0140	m1_f2_c1	0.0313	0.0162
m1_f2_c2	-0.0154	0.0158	m1_f2_c2	-0.0269	0.0152
m2_f1_c1	0.0007	0.0183	m2_f1_c1	0.0020	0.0131
m2_f1_c2	-0.0322	0.0193	m2_f1_c2	-0.0156	0.0153
m2_f2_c1	-0.0115	0.0184	m2_f2_c1	-0.0199	0.0138
m2_f2_c2	-0.0090	0.0319	m2_f2_c2	-0.0806	0.0158

GMM estimation, continued
GMM weight matrix: Cluster (uzcode)
(Std. Err. adjusted for 281 clusters in uzcode)

	Estimate	Robust Std. Err.		Estimate	Robust Std. Err.
beta			gamma_c		
one	-0.1679	0.0041	one	0.1675	0.0179
lndelta			avg_age_men	0.0149	0.0046
one	0.1214	0.0349	avg_age_women	-0.0311	0.0059
			avg_edu_men	0.0079	0.0014
			avg_edu_women	0.0015	0.0018
			avg_age_children	0.1352	0.0140
			frac_girl	0.0106	0.0099
			ln_dowry	0.0021	0.0013
			m1_f1_c1	-0.0440	0.0234
			m1_f1_c3	0.0184	0.0225
			m1_f1_c4	0.0888	0.0328
			m1_f2_c1	-0.0482	0.0210
			m1_f2_c2	-0.0225	0.0251
			m2_f1_c1	-0.0926	0.0185
			m2_f1_c2	0.0338	0.0276
			m2_f2_c1	-0.0320	0.0240
			m2_f2_c2	0.1128	0.0632

Table A3: Estimated Efficiency and Resource Shares, Varying Samples

function	person	variable	(7) Food Zeroes Estimate	*Std Err*	(8) Restrict Sample Estimate	*Std Err*	(9) Nuclear Families Estimate	*Std Err*
$\ln\delta$	all	constant	0.135	*0.039*	0.173	*0.040*	0.078	*0.040*
resource shares	men, η_m	constant	0.280	*0.013*	0.289	*0.012*	0.301	*0.011*
		f	0.033	*0.006*	0.039	*0.006*	0.020	*0.005*
	women, η_f	constant	0.347	*0.015*	0.337	*0.013*	0.328	*0.015*
		f	-0.003	*0.005*	0.014	*0.007*	0.007	*0.006*
	children, η_c	constant	0.373	*0.018*	0.374	*0.014*	0.371	*0.017*
		f	-0.030	*0.007*	-0.053	*0.008*	-0.028	*0.008*
Change in Welfare	men		0.278	*0.059*	0.351	*0.059*	0.154	*0.054*
	women		0.135	*0.047*	0.237	*0.061*	0.105	*0.047*
	children		0.054	*0.045*	0.019	*0.042*	0.000	*0.045*
N			3238		2698		1675	
J-stat	val [df] p		204.6 [192]	*0.25*	196.3 [190]	*0.36*	161.9 [163]	*0.51*

We report 2-step GMM estimates, with standard errors are clustered at the village level, of the marginal effects of f on efficiency $\ln\delta$, resource shares η and money-metric welfare Δ_j. Unconditional moments are defined by instruments multiplied by each of the 3 equations, where instruments are $(1, r_{1h}, z_h) \times (1, r_{2h})$, where r_{1h} and r_{2h} are the first four powers of village-average f and log-wealth, respectively. Compared to the baseline sample, in column (7) we add 328 households with zero food spending for at least 1 member; in column (8), we drop 302 observations where either the female respondent is unmarried, reported wealth is zero, or expenditure is an outlier; in column (9), we drop non-nuclear households.

1 Discussion of Table A3

In Table A3, we consider three alternatives regarding data construction in our baseline model. In the leftmost column, labeled (7), we retain the previously dropped 238 households that had zero food intake for any member type (adult males, adult females or children). We dropped these households because they likely indicate measurement issues. However, if these zeroes result instead from infrequency that is correlated with regressors (e.g., if significant numbers of households are so poor that some members don't eat every day), then excluding these households could lead to bias. In comparison with the baseline estimates, we see slightly smaller estimates of resource shares for men in the reference household type, and slightly larger estimates of resource shares for women and children. However, the estimated marginal effect of cooperation f on resource shares is very similar to the baseline estimates: cooperation increases male resource shares by about 3 percentage points, has roughly no effect on female resource shares and reduces children's resource shares by 3 percentage points. The estimated efficiency gain from cooperation is also very similar to baseline, with $\delta = \exp(0.135)$, or about 14 per cent. The resulting money metric utility gains Δ_j from efficiency are 28 per cent for men, 14 per cent for women, and 5 per cent for children, compared to the baseline estimates of 23, 11, and 6 percent.

In the middle panel, we consider some additional sample restrictions that may be sensible. In this model we exclude: a) households where the female respondent is not married; b) households in the top or bottom percentile of the distribution of budgets; and c) households that report zero wealth. The restriction a) is relevant because our cooperation indicator specifically refers to husbands, and respondents in households where the female respondent is not married may not consider the response "self and husband" to be valid. The restriction b) is used because outliers in the budget may have excessive influence on the slopes of estimated Engel curves. The restriction c) is because reported zero wealth may actually be mismeasured wealth. These restrictions result in the loss of 302 observations (roughly 10 per cent of the sample).

The resulting estimates in column (8) are somewhat different from the baseline. The estimated value of $\ln\delta$ is 0.173, which is a bit larger than that in the baseline. The associated efficiency gain δ is about 19 per cent. Cooperation now increases male and female resource shares by roughly 4 and 1 percentage points, respectively, and decreases children's resource shares by roughly 5 percentage points. At a gross level, these results are qualitatively the same as the baseline (men gain a lot, women a little and children's money metric change is insignificant), but the estimated magnitudes are somewhat larger.

The nuclear households in our data have 1 adult man and 1 adult woman and one to four children. We also have 1325 non-nuclear households, having either more than 1 adult man or more than 1 adult woman. These non-nuclear households are a mix of polygamous and multi-generational households. Our model and data might be less appropriate for these non-nuclear households, since our cooperation factor f is only reported by "the main" adult female in the household, and primarily refers to joint decision making by the main adult woman and her husband. Column (9) in Table 4 reports result from estimating the model just with nuclear households, which greatly reduces the sample size.

Again, we see similar patterns as in the baseline case. Cooperation increases efficiency, and induces a shift in resource shares from children towards adult men, with a statistically insigificant impact on the resource shares of women. However, the estimated marginal effect of cooperation f on $\ln\delta$ is much smaller in these nuclear households than in the baseline model, with an estimated value of 0.078. This means that cooperation induces an efficiency gain of only ($\exp 0.078$) 8 per cent in nuclear households, compared with 13 per cent for all households.

The main difference between nuclear households and the full sample is that the nuclear subsample has smaller households on average. This suggests that the efficiency gains δ may depend on household size. Having more people in a household means goods can be jointly consumed by more household members, leading to greater efficiency. In our model, this can arise because more people sharing a good means a smaller element of A for that good, and hence a lower shadow price.