

SUPPLEMENTARY MATERIALS:

Heritage of Hunger: Ethnicity, Resource Allocation, and Child Poverty

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October 27, 2026

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Appendix A: Brief Overview of LPW

I provide a brief overview of the linear reframing proposed by Lechene et al. (2022) (LPW). I denote all household observables with the subscript h and W_h^t as the observed household budget share of the assignable good for member type t . Let z_h be a vector of covariates including both the sharing rule determinants z^{sr} and the preference shifters z^p . Lastly, let ϵ_h^t be an additive error term. Then, using the PIGLOG preference structure (3) from the main text, with the SAP assumption ($\beta = \beta_t$), the system of equations can be written as

$$W_h^t = a_h^t + b_h^t \ln y_h + \epsilon_h^t \quad \forall \quad t, \quad (\text{A1})$$

where

$$a_h^t = \eta_t(z_h) \alpha^t(z_h) + \eta_t(z_h) \beta(z_h) \ln \eta_t(z_h) - \eta_t(z_h) \beta(z_h) \ln N_h^t \quad (\text{A2})$$

and

$$b_h^t = \eta_t(z_h) \beta(z_h). \quad (\text{A3})$$

By rearranging (A3), an equation for the resource shares is

$$\eta_t(z_h) = \frac{b_h^t}{\beta(z_h)}. \quad (\text{A4})$$

Since estimating (A2) and (A3) directly is not feasible with a high-dimensional conditioning vector z_h , LPW approximate¹ these terms with the linear indices

$$a_h^t = a_0^t + a_{\ln N^t}^t \ln N_h^t + \mathbf{a}_z^{t'} z_h \quad (\text{A5})$$

and

$$b_h^t = b_0^t + \mathbf{b}_z^{t'} z_h. \quad (\text{A6})$$

Substituting (A5) and (A6) into (A1) yields

$$W_h^t = a_0^t + a_{\ln N^t}^t \ln N_h^t + \mathbf{a}_z^{t'} z_h + b_0^t \ln y_h + \mathbf{b}_z^{t'} z_h \ln y_h + \epsilon_h^t,$$

which is the linear individual assignable goods Engel curve for each household member type. Using seemingly unrelated regression (SUR), one can get the estimates $\hat{b}_h^t = \hat{b}_0^t + \hat{\mathbf{b}}_z^{t'} z_h$. Using these estimates along with the assumption that individual resource shares sum to 1 across member types, $\sum_{t=1}^T \hat{b}_h^t$ can be used as an estimate for $\beta(z_h)$.² Lastly,

¹This approximation for b_h^t is exact if η_t is linear in z_h and β is independent of z_h , i.e., if β is a constant.

²To see this, notice that $\sum_t \eta_t(z_h) = \sum_t b_h^t / \beta(z_h) = 1$, which implies that $\beta(z_h) = \sum_t b_h^t$.

using these estimates and (A4), resource shares can be estimated by

$$\hat{\eta}_t(z_h) = \frac{\hat{b}_h^t}{\sum_{t=1}^T \hat{b}_h^t} = \frac{\hat{b}_0^t + \hat{\mathbf{b}}_z^{t'} z_h}{\sum_{t=1}^T (\hat{b}_0^t + \hat{\mathbf{b}}_z^{t'} z_h)}. \quad (\text{A7})$$

LPW caution that (A7) is sensitive to a denominator with large variation or one close to zero. For this reason, they propose the linear restriction

$$\sum_t b_{\tilde{z}}^t = 0, \quad (\text{A8})$$

where $\tilde{z}$ denotes the covariates other than the numbers of men, women, and children. This implies that $\sum_{t=1}^T \hat{b}_h^t = \sum_t (\hat{b}_0^t + \hat{b}_{Nm}^t N_h^m + \hat{b}_{Nf}^t N_h^f + \hat{b}_{Nc}^t N_h^c)$. Using this restriction, resource shares can be estimated using

$$\hat{\eta}_t(z_h) = \frac{\hat{b}_0^t + \hat{\mathbf{b}}_z^{t'} z_h}{\sum_t (\hat{b}_0^t + \hat{b}_{Nm}^t N_h^m + \hat{b}_{Nf}^t N_h^f + \hat{b}_{Nc}^t N_h^c)}$$

separately for each household composition in each country.

To perform the linear identification tests, first notice from (A4) that resource shares cannot be identified if $\beta(z_h) = 0$. Now, the overall household assignable-goods Engel curve can be written as

$$W_h = a_h + b_h \ln y_h + \epsilon_h, \quad (\text{A9})$$

which is the sum of individual member Engel curves.³ Therefore, estimating (A9) with ordinary least squares (OLS) provides an estimate $\hat{b}_h$ of $\beta(z_h)$. When performing this identification test, I assume the linear restriction in (A8) holds. For every household in the sample, I test whether $\hat{b}_h$ is zero and report the fraction of households for which this is rejected. Following LPW, I exclude household compositions with fewer than 100 households from the linear tests, which removes households with men and children in every country except Ghana.

The second test is whether the overall assignable-goods Engel curve, evaluated at the mean of z_h , has a non-zero slope. Letting $\bar{z}$ denote the vector of mean covariate values,

$$E[\hat{b}_h] = \hat{b}_0 + \hat{\mathbf{b}}_z' \bar{z}$$

³ $W_h = \sum_t W_h^t$; $a_h = \sum_t a_h^t$; $b_h = \sum_t b_h^t$; and $\epsilon_h = \sum_t \epsilon_h^t$.

can be used to perform a Z-test where the rejection of the null is a necessary condition for identification.

Appendix B: Data and Descriptive Statistics

This section describes the data: the sample construction for each country, the assignable good, descriptive statistics, and the procedure for matching households to ancestral ethnic groups.

B.1: Data

Table B1 provides a detailed breakdown of the sample sizes and household compositions. LPW use earlier rounds of the LSMS for Ethiopia, Ghana, Malawi, Nigeria, and Uganda, but among these, only Malawi passes their identification tests. By using more recent data that leverage improvements in survey methodology—such as Computer-Assisted Personal Interviewing (CAPI) and the LSMS research agenda to enhance individual-level data (Carletto & Gourlay, 2019)—I extend the analysis to Ethiopia, Ghana, Nigeria, and Uganda. Table B1 also reports Niger and Tanzania, which do not pass the identification tests in Table 1 and are not used further. I exclude households with missing or implausible data on age, sex, or adult education, as well as those with missing or implausible values for aggregate consumption or clothing expenditure. To mitigate the influence of extreme outliers in large households, I restrict the sample to households with no more than four men, four women, and six children.

Table B1 shows that a substantial portion of the sample in each country is non-nuclear, so including these household structures is important for representing households in sub-Saharan Africa (SSA). The final estimation sample ranges from 2,427 households in Uganda to 8,702 in Malawi, totaling 27,399 households across the five countries. The primary assignable good across all countries is clothing and footwear purchases, plus own-produced clothing in Ghana. Table B2 summarizes data availability for these items. To maintain uniformity, I aggregate clothing and footwear expenditures into three categories: adult men, adult women, and children. The definition of a child follows each country's survey design, ranging from under 14 in Ghana to under 18 in Ethiopia and Uganda.

Table B1: Sample Descriptors

Country	Survey Year	Total Sample	Single-Adult Sample	Nuclear Sample	Estimation Sample	Household Compositions
Ethiopia	2018-2019	6,770	926	3,662	5,248	mfc, mf, fc, mc, m, f, c
Ghana	2016-2017	14,009	3,314	4,802	7,723	mfc, mf, fc, mc, m, f
Malawi	2019-2020	11,434	1,024	6,195	8,702	mfc, mf, fc, mc, m, f
Niger	2014	3,617	153	2,383	2,944	mfc, mf, fc, mc, m, f
Nigeria	2018-2019	5,025	625	2,401	3,299	mfc, mf, fc, mc, m, f, c
Tanzania	2020-2022	4,709	487	2,609	3,554	mfc, mf, fc, mc, m, f, c
Uganda	2019-2020	3,098	318	1,780	2,427	mfc, mf, fc, mc, m, f
All	2014 - 2022	48,662	6,847	23,832	33,897	mfc, mf, fc, mc, m, f, c

Note: The estimation sample excludes households with missing/improbable interview dates, demographics, or consumption and clothing expenditure data. It also omits single-adult households and those where the number of men, women, or children exceeds four, four, and six, respectively. Household compositions are defined by member presence: *m*, *f*, and *c* denote the presence of a man, woman, and child, respectively.

Table B2: The Assignable Good

Country	Member Types				Included in the Good			
	Men	Women	Children	Boys and Girls	Footwear	Own Production	Households with Any Spending (%)	Children's Ages
Ethiopia	Y	Y	Y	Y	C	N	86.1	< 18
Ghana	Y	Y	Y	N	Y	Y	96.3	< 14
Malawi	Y	Y	Y	Y	Y	N	65.0	< 15
Niger	Y	Y	Y	N	Y	N	94.1	< 15
Nigeria	Y	Y	Y	Y	Y	N	93.9	< 15
Tanzania	Y	Y	Y	N	Y	N	91.4	< 16
Uganda	Y	Y	Y	N	Y	N	85.2	< 18

Note: The assignable good is spending on clothing and footwear for adult men, adult women, and children. Y - yes; N - no; C - footwear is recorded inside the clothing items, not separately. Every survey records men's, women's, and children's spending separately; Boys and Girls marks surveys that also split children's spending by sex. The estimation uses children's spending as one bucket, which includes items recorded without a sex (infant clothing and nappies). The good is purchases only, except in Ghana, where GLSS7 also values own-produced clothing by member type and it is included. Households with Any Spending is the share of all surveyed households with positive spending on the good for any member. Children are household members younger than the age shown, defined by each survey.

Table B3: Descriptive Statistics of Covariates

	Ethiopia	Ghana	Malawi	Nigeria	Uganda	Total
Mean Age of Men	38.12 (13.19)	37.85 (13.63)	35.27 (13.65)	39.68 (13.63)	37.80 (13.18)	38.49 (13.47)
Mean Age of Women	35.26 (12.00)	37.19 (12.93)	34.81 (13.92)	36.77 (13.18)	37.18 (12.97)	36.21 (12.81)
Mean Age of Children	8.24 (4.22)	6.15 (3.39)	6.63 (3.50)	6.67 (3.47)	7.82 (4.09)	7.36 (3.92)
Minimum Age of Children	5.30 (4.67)	4.22 (3.78)	4.21 (3.76)	4.13 (4.02)	4.68 (4.42)	4.64 (4.32)
Mean Education of Men	4.34 (4.64)	8.09 (4.58)	6.96 (3.69)	7.96 (5.31)	8.02 (3.88)	6.68 (5.07)
Mean Education of Women	2.67 (3.99)	6.39 (4.50)	5.64 (3.65)	6.35 (5.31)	6.39 (3.91)	5.04 (4.85)
Area Type (0 - Rural, 1 - Urban)	0.29 (0.45)	0.56 (0.50)	0.16 (0.36)	0.32 (0.47)	0.29 (0.46)	0.31 (0.46)
Number of Men in a Household	1.10 (0.67)	1.10 (0.81)	1.09 (0.75)	1.31 (0.80)	1.11 (0.78)	1.18 (0.76)
Number of Women in a Household	1.19 (0.54)	1.40 (0.72)	1.27 (0.58)	1.45 (0.73)	1.25 (0.59)	1.32 (0.65)
Number of Children in a Household	2.41 (1.63)	1.75 (1.38)	2.07 (1.35)	2.30 (1.74)	2.64 (1.59)	2.32 (1.65)
Proportion of Boys in a Household	0.49 (0.36)	0.51 (0.39)	0.50 (0.38)	0.50 (0.36)	0.48 (0.34)	0.50 (0.36)

Note: This table displays the means and standard deviations (in parentheses) for all households in the estimation sample, using household weights, so the estimates are population-weighted and the Total column weights each country by its population of households. Each statistic is computed over the households for which it is defined: men's age and education over households with men, women's over households with women, and children's age and the proportion of boys over households with children. Values for mean age and mean education are the average age and education across member types within each household. Values for minimum child age are for the youngest child per household. Values for the number of men, women, and children are averages per household. Note that children's ages (as defined by the surveys) vary across samples.

B.2: Descriptive Statistics

Table B3 presents summary statistics for the covariates in the final estimation sample. Adult men are older than adult women in every country, with mean ages of about 38 and 36 years, respectively. There is also a gender gap in education, with adult men averaging 6.7 years of education compared with 5.0 years for adult women. The average age of children in the sample, ranging from about 6 years in Ghana to 8 years in Ethiopia, reflects the varying thresholds used by the respective national surveys to define a child. The samples are predominantly rural, except in Ghana, where 56% of households are urban, while Malawi is the most rural (84%). Households have about 1.2 men, 1.3 women, and 2.3 children on average, with the most children in Uganda (2.6) and Ethiopia (2.4).

Table B4: Descriptive Statistics of Budget Information

	Ethiopia	Ghana	Malawi	Nigeria	Uganda	Total
Share of Men's Clothes of Total Budget	0.027 (0.037)	0.021 (0.025)	0.006 (0.017)	0.010 (0.012)	0.008 (0.011)	0.016 (0.026)
Share of Women's Clothes of Total Budget	0.023 (0.030)	0.022 (0.021)	0.015 (0.027)	0.012 (0.013)	0.010 (0.012)	0.017 (0.022)
Share of Children's Clothes of Total Budget	0.033 (0.041)	0.019 (0.021)	0.017 (0.030)	0.022 (0.022)	0.010 (0.011)	0.023 (0.031)
Share of Men's Clothes of Clothes Budget	0.289 (0.256)	0.305 (0.256)	0.134 (0.243)	0.223 (0.208)	0.282 (0.277)	0.257 (0.245)
Share of Women's Clothes of Clothes Budget	0.269 (0.237)	0.360 (0.221)	0.374 (0.360)	0.275 (0.203)	0.344 (0.273)	0.294 (0.239)
Share of Children's Clothes of Clothes Budget	0.442 (0.332)	0.335 (0.250)	0.492 (0.383)	0.502 (0.290)	0.374 (0.285)	0.449 (0.311)

Note: This table displays the means and standard deviations (in parentheses) for households in the estimation sample. Clothes and budget shares are the mean values summed across household member types. Shares of the total budget include households with zero clothing expenditure; shares of the clothes budget are computed only for households with positive clothing expenditure.

Table B4 reports the clothing budget shares. Across the sample, clothing accounts for less than 9% of the total household budget. This small share does not hinder estimation, because resource shares are identified from how clothing spending responds to the total budget (the slope), not from its level.⁴ Within the clothing budget, children receive the

⁴Resource shares identify household members' access to the total household budget, not just their consumption of the assignable good.

largest share on average (44.9%), most of all in Nigeria (50.2%), Malawi (49.2%), and Ethiopia (44.2%). Among adults, women's share (29.4%) exceeds men's (25.7%). Ghana is the exception, where women's clothing takes the largest share (36.0%), followed by children (33.5%) and men (30.5%), so that Ghanaian children receive the smallest share of the clothing budget of any country.

Table B5: Child Anthropometrics

	Ethiopia	Ghana	Malawi	Nigeria	Uganda	Total
Sex (Male=0, Female=1)	0.49 (0.50)	0.49 (0.50)	0.50 (0.50)	0.50 (0.50)	0.51 (0.50)	0.50 (0.50)
Age (in completed months)	32.22 (14.47)	32.61 (16.40)	30.19 (16.68)	32.12 (17.14)	33.68 (15.83)	31.76 (16.33)
Weight (kg)	11.76 (3.13)	12.18 (3.57)	11.76 (3.24)	11.68 (3.62)	12.44 (3.11)	11.92 (3.37)
Height (cm)	85.21 (11.92)	88.00 (14.01)	84.34 (12.92)	84.86 (13.58)	87.72 (11.89)	85.84 (13.20)
Height-for-Age Z-score	-1.82 (1.94)	-0.86 (1.82)	-1.35 (1.47)	-1.55 (1.73)	-1.27 (1.33)	-1.31 (1.71)
Weight-for-Age Z-score	-1.08 (1.42)	-0.74 (1.25)	-0.63 (1.13)	-0.99 (1.33)	-0.70 (1.02)	-0.79 (1.24)
Weight-for-Height Z-score	-0.10 (1.86)	-0.37 (1.56)	0.19 (1.25)	-0.13 (1.45)	0.01 (1.06)	-0.07 (1.47)

Note: This table shows the means and standard deviations (in parentheses) for children under five years old. The sample includes children with plausible Z-scores ($[-5, 5]$).

Table B5 presents anthropometrics for children under five. The sample is evenly split between boys and girls, with an average age of about 32 months. Z-scores measure deviations from the World Health Organization (WHO) reference population: height-for-age (HAZ) for stunting, weight-for-age (WAZ) for underweight, and weight-for-height (WHZ) for wasting. The WHO classifies a child as stunted, underweight, or wasted if the respective Z-score is below -2 .

The average child in Ethiopia has an HAZ of -1.82 , close to the WHO threshold, and nearly half of Ethiopian children (49%) are stunted. Across the sample, Table B6 shows that 33% of children are stunted and 9% are wasted, consistent with chronic rather than acute undernutrition being the main nutritional problem in the region (Brown et al., 2019).

Table B6: Child Malnutrition Categories

	Ethiopia	Ghana	Malawi	Nigeria	Uganda	Total
Stunting						
Healthy ($HAZ > -1$)	880 (0.32)	2,509 (0.51)	2,258 (0.37)	1,095 (0.38)	636 (0.40)	7,378 (0.40)
Marginal ($-1 > HAZ > -2$)	527 (0.19)	1,168 (0.24)	1,883 (0.31)	666 (0.23)	530 (0.34)	4,774 (0.26)
Moderate ($-2 > HAZ > -3$)	506 (0.18)	735 (0.15)	1,248 (0.21)	513 (0.18)	264 (0.17)	3,266 (0.18)
Severe ($HAZ < -3$)	824 (0.30)	553 (0.11)	695 (0.11)	603 (0.21)	151 (0.10)	2,826 (0.15)
Underweight						
Healthy ($-1 < WAZ \leq 2$)	1,298 (0.47)	2,726 (0.55)	3,704 (0.61)	1,462 (0.51)	988 (0.62)	10,178 (0.56)
Marginal ($-1 > WAZ > -2$)	716 (0.26)	1,442 (0.29)	1,647 (0.27)	768 (0.27)	448 (0.28)	5,021 (0.28)
Moderate ($-2 > WAZ > -3$)	408 (0.15)	526 (0.11)	529 (0.09)	395 (0.14)	107 (0.07)	1,965 (0.11)
Severe ($WAZ < -3$)	265 (0.10)	146 (0.03)	97 (0.02)	208 (0.07)	29 (0.02)	745 (0.04)
Overweight ($WAZ > 2$)	50 (0.02)	125 (0.03)	107 (0.02)	44 (0.02)	9 (0.01)	335 (0.02)
Wasting						
Healthy ($-1 < WHZ \leq 2$)	1,576 (0.58)	3,023 (0.61)	4,810 (0.79)	2,015 (0.70)	1,300 (0.82)	12,724 (0.70)
Marginal ($-1 > WHZ > -2$)	409 (0.15)	964 (0.19)	663 (0.11)	434 (0.15)	196 (0.12)	2,666 (0.15)
Moderate ($-2 > WHZ > -3$)	219 (0.08)	402 (0.08)	144 (0.02)	160 (0.06)	35 (0.02)	960 (0.05)
Severe ($WHZ < -3$)	186 (0.07)	241 (0.05)	74 (0.01)	82 (0.03)	16 (0.01)	599 (0.03)
Overweight ($WHZ > 2$)	347 (0.13)	335 (0.07)	393 (0.06)	186 (0.06)	34 (0.02)	1,295 (0.07)

Note: This table displays the frequencies and fraction of the total sample (in parentheses) for children's malnutrition rates. The sample only includes children under five years whose Z-scores are plausible ($[-5, 5]$). There are 18,244 children in the sample, with Ethiopia, Ghana, Malawi, Nigeria, and Uganda contributing 2,737, 4,965, 6,084, 2,877, and 1,581 children, respectively.

B.3: Matching to Ethnic Groups

Matching Strategy. Matching households to ethnic groups in the Ethnographic Atlas (EA) is common in the literature (Alesina et al., 2013; Aminjonov et al., 2024; Ashraf

et al., 2020; Nunn & Wantchekon, 2011), using (1) self-reported ethnicity, (2) the primary language spoken, or (3) geographic location. Because these identifiers differ across the LSMS surveys, I use the most accurate one available in each country while keeping the approach as consistent as possible. For Ethiopia, Malawi, and Nigeria, I intersect the cluster-level GPS coordinates with Ethnologue language maps, which Giuliano and Nunn (2018) link to the EA societies. A cluster that falls outside its country’s language polygons takes the polygon of the same language in a neighboring country or, failing that, the nearest homeland within 10 km. Spatial matching can introduce measurement error, particularly given the LSMS privacy protocols.⁵ Because ethnic groups are geographically clustered, this noise is unlikely to bias the matches systematically.

Some recent studies match on language (Aminjonov et al., 2024). Matching on location instead avoids misclassifying minority households that adopt the dominant local language for economic or social reasons while keeping their ancestral norms. For Ghana, which has no GPS coordinates, I use self-reported ethnicity and a sequential matching strategy (Aminjonov et al., 2024; Nunn & Wantchekon, 2011). First, I match the member directly if a one-to-one match exists. Second, I use synonyms and known variations of ethnic group names, cross-referenced from the Afrobarometer, Demographic and Health Surveys (DHS), and the Joshua Project. Third, for members reporting broader ethnolinguistic groups, I use the classifications compiled by Giuliano and Nunn (2018). Each household then takes the most common ethnicity among its members, with ties resolved by the head’s ethnicity. For Uganda, where neither GPS coordinates nor ethnicity are available, I place each household in its parish (or, where the parish is unknown, its sub-county or district) and assign the EA society that covers the largest share of that area. Between 96% and 100% of each country’s households are matched to the EA.

Validating Malawi Matching Strategy. Table B7 cross-tabulates spatial and language matching for Malawi. The two agree for 74.6% of households, and the disagreement is systematic. Many households in ancestral Makua territory now report Malawi’s common language, Nyanja (Chichewa), as their primary language. Language matching would misclassify these households, while GPS matching links them to their ancestral homeland. The EA, however, does not record crop type, settlement patterns, jurisdictional hierarchy, or male circumcision for the Makua, so their households do not enter the second phase, which includes 7 of the 8 Malawian groups.

⁵The GPS coordinates of household locations are randomly offset by 0–2 km for urban areas, 0–5 km for rural areas, and 0–10 km for about 1% of clusters. The coordinates are therefore accurate at the cluster level within these limits.

Table B7: Malawi: Language vs. GPS Matching

Language Matched Ethnic Group	GPS Matched Ethnic Group							
	Laketonga	Makua	Ngonde	Nyanja	Safwa	Sena	Tumbuka	Yao
Laketonga	230	0	0	36	0	0	1	0
Makua	3	156	0	108	0	1	1	16
Ngonde	6	3	125	4	3	1	6	0
Nyanja	136	1,057	6	6,269	6	47	42	197
Safwa	7	0	36	3	242	0	7	0
Sena	1	36	0	134	0	252	0	0
Tumbuka	290	0	83	199	57	1	630	0
Yao	3	9	0	283	0	0	6	408

Note: This table displays the frequencies of households assigned to each ethnic group in Malawi based on language matching (rows) and GPS matching (columns).

Stability and Persistence of Ancestral Traits. Despite migration and economic change, a large literature shows that ancestral cultural traits persist over long periods through inherited norms and traditions (Alesina et al., 2013; Bahrami-Rad et al., 2021; Giuliano & Nunn, 2018, 2021). Following Bahrami-Rad et al. (2021), I check the contemporary relevance of the EA in this sample by relating ancestral traits (e.g., matrilocality, patrilocality, polygyny, animal husbandry, and agriculture) to their modern counterparts in the LSMS (e.g., marriage structures, livestock ownership, and the use of agricultural tools). Table B8 shows that six of the eight associations are positive, and the other two, for matrilocality residence and sickle ownership, are close to zero. Households in ancestrally extended-family groups have 0.90 more members, households in ancestrally polygynous groups are 3.0 percentage points more likely to be polygynous, and ancestral dependence on animal husbandry is associated with livestock ownership today. Ancestral patrilocality is also associated with married sons and daughters-in-law living with the household head, although the association is small. This suggests that ancestral practices still shape how households live.

Spatial Heterogeneity of Ancestral Traits. Neighboring ethnic groups often differ in their ancestral traits, although, as Table F1 shows, much of the variation in several traits lies between regions. For example, in North Ethiopia, the Tigrinya and Falasha exhibit relatively high ancestral agricultural dependence (66–75%), whereas the Amhara exhibit medium dependence (56–65%) and the Afar exhibit minimal agricultural reliance (0–5%). Marriage customs also vary between the Tigrinya (dowry system), the Afar and Macha (bride price), and the Koma (sister/relative exchange). Settlement patterns also differ, from the seminomadic Afar to the compact permanent settlements of the Tigrinya and

Table B8: Ancestral Practices and Their Modern Counterparts

Ancestral Practice	Modern Counterpart	Coefficient	Observations
Matrilocal residence	Married daughter or son-in-law of the head	0.000 (0.001)	177,088
Patrilocal residence	Married son or daughter-in-law of the head	0.004** (0.002)	177,088
Polygyny	Polygynous household	0.030*** (0.011)	38,897
Animal husbandry (<i>v4</i>)	Household owns livestock	0.036** (0.017)	29,860
Agriculture (<i>v5</i>)	Household owns a plough	0.017 (0.011)	39,530
Agriculture (<i>v5</i>)	Household owns a sickle	−0.009 (0.026)	36,453
Nomadic-type settlement	Household owns livestock	0.033 (0.022)	28,386
Extended families	Household size	0.896** (0.424)	37,977

Note: Regressions of each modern counterpart on the ancestral practice, with area type and country fixed effects and household weights. Observations are household members for the two residence outcomes and households for the others. Animal husbandry and agriculture are the Ethnographic Atlas dependence bands (0–9). Standard errors clustered by ethnic group in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

the separated hamlets of the Amhara.

Ethnic Matches in Urban Areas. Including urban households keeps the more economically integrated part of the population in the sample. Urban residents may no longer farm, but the norms formed by ancestral practices can still be passed on across generations, and migrants to African cities often settle near co-ethnics. Matching is noisier in urban areas, but most children in Ethiopia (60%), Ghana (64%), Malawi (83%), Nigeria (69%), and Uganda (80%) live in rural areas, and area type enters the sharing rule determinants.

Appendix C: Baseline Results

This section presents additional results from the Phase 1 estimation: predicted poverty rates, the relationship between resource shares and child undernutrition, and differences across ethnic groups.

C.1: Poverty Rates

Table C1 compares per-capita poverty rates with unadjusted and calorie-adjusted individual poverty rates for the five countries. The unadjusted individual rates show large gaps within the household, with children and women poorer than men in every country. In Nigeria, for instance, 87% of children are poor, compared with a per-capita rate of 27% in the estimation sample. Rescaling the individual poverty lines to age- and sex-specific caloric requirements (Brown et al., 2021) narrows these gaps, since young children need fewer calories than prime-age adults. Child poverty falls from 59% to 39% in Ethiopia and from 78% to 54% in Malawi. Even so, calorie-adjusted child poverty in Ghana and Nigeria remains well above the per-capita rate (37% versus 19% and 66% versus 27%).

Table C1: Predicted Poverty Rates

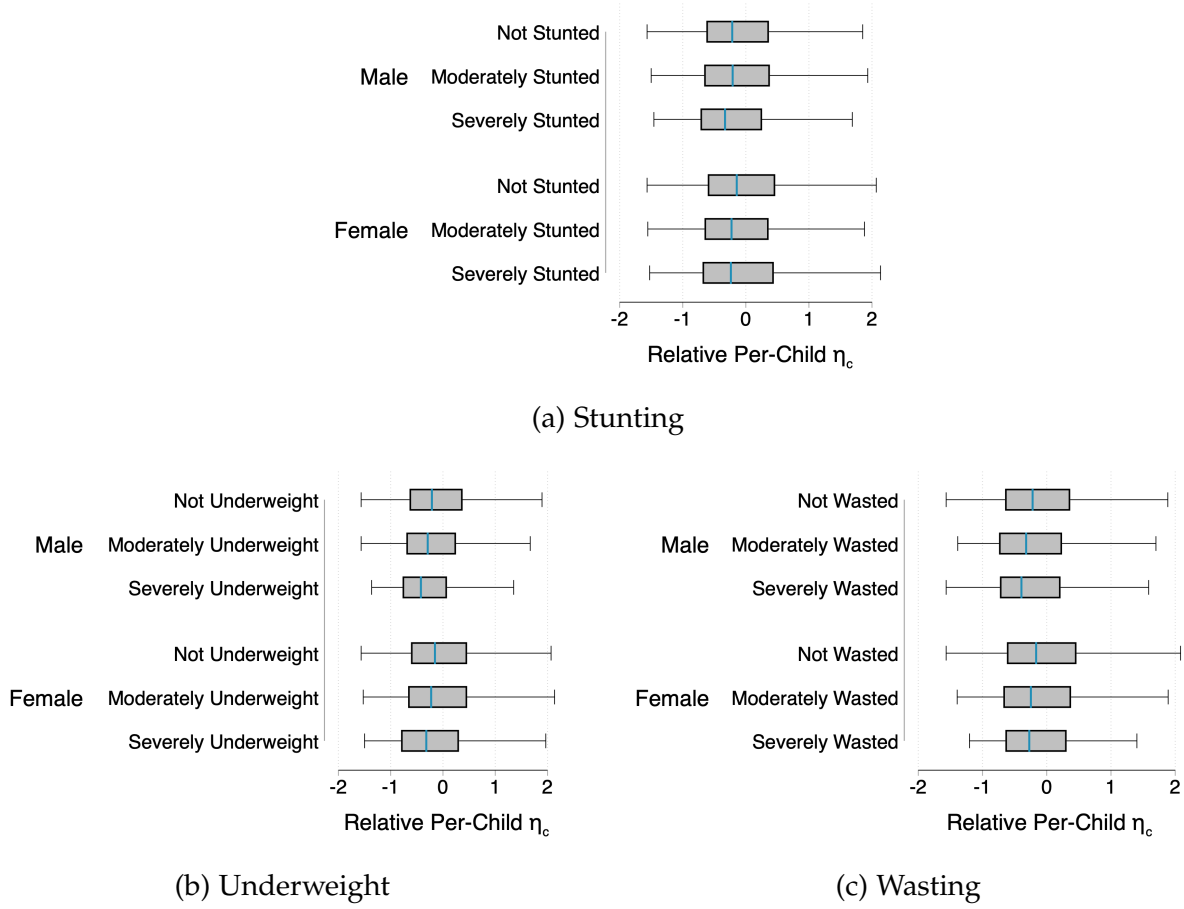
Country	Per-Capita Poverty Rate		Unadjusted Individual Poverty Rate			Calorie-Adjusted Individual Poverty Rate		
	National	Estimation Sample	Men	Women	Children	Men	Women	Children
Ethiopia	0.48	0.47	0.37	0.39	0.59	0.41	0.30	0.39
Ghana	0.24	0.19	0.06	0.14	0.62	0.07	0.10	0.37
Malawi	0.72	0.70	0.56	0.70	0.78	0.60	0.60	0.54
Nigeria	0.36	0.27	0.04	0.14	0.87	0.05	0.09	0.66
Uganda	0.38	0.36	0.16	0.22	0.61	0.20	0.14	0.36

Note: Poverty headcount rates at the \$2.15/day extreme poverty line (2017 US\$ PPP), using household weights. The national per-capita rate covers all individuals in the survey; all other rates cover households with estimated resource shares and single-type households, whose members share resources equally. Individual rates use total household expenditure times the individual's resource share. Calorie-adjusted rates rescale the poverty line by age- and sex-specific caloric requirements, with \$2.15/day for adults aged 15–45 (Brown et al., 2021).

C.2: Resource Shares and Undernutrition

Stunting (HAZ), underweight (WAZ), and wasting (WHZ) capture different nutritional problems (Brown et al., 2019). Stunting and underweight indicate prolonged undernutrition with lasting developmental consequences, while wasting reflects acute undernutrition, typically driven by seasonal food shortages or recent illness. Figure C1 shows the distribution of relative per-child resource shares by nutritional status. For all three indi-

Figure C1: Child Undernutrition and Resource Shares

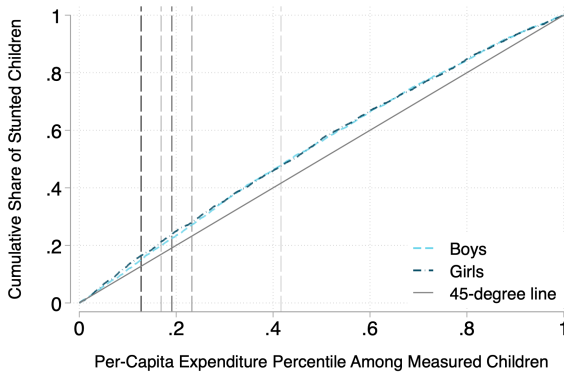


Note: Per-child resource shares, standardized within each country, by undernutrition category: severe ($Z < -3$), moderate ($-3 \leq Z < -2$), and not undernourished ($Z \geq -2$). Children aged 0-5 years, excluding Z-scores outside $[-5, 5]$.

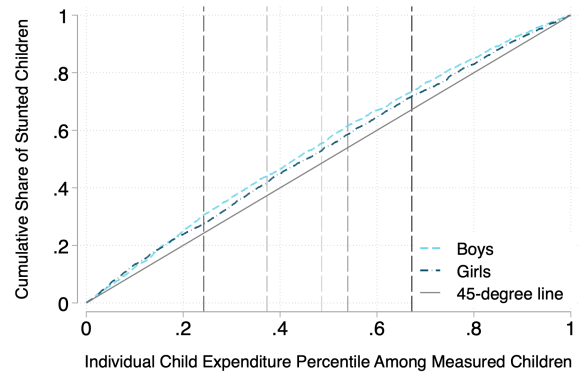
cators, and for both boys and girls, severely undernourished children have lower median shares than children who are not undernourished. The differences are small relative to the spread within each category.

Figure C3 plots the predicted probability of undernutrition from logit regressions against within-country expenditure percentiles. Predicted stunting falls from 41% at the bottom of the per-capita expenditure distribution to 26% at the top, and underweight from 20% to 10%. Wasting changes less, from 10% to 7%. The curves for individual child expenditure are nearly identical. The concentration curves in Figure C2 tell the same story. Stunting and underweight are concentrated among poorer children, but the curves lie only modestly above the 45-degree line, and wasting is spread almost evenly across the distribution.

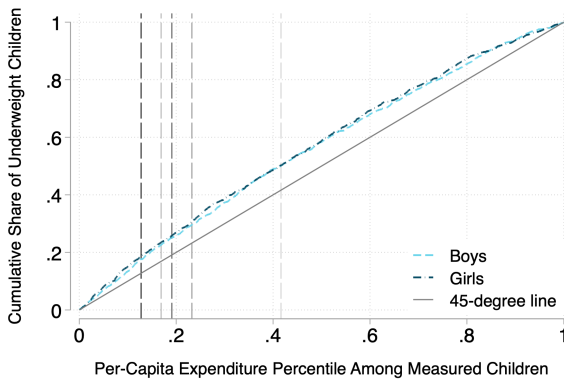
Figure C2: Undernutrition Concentration Curves



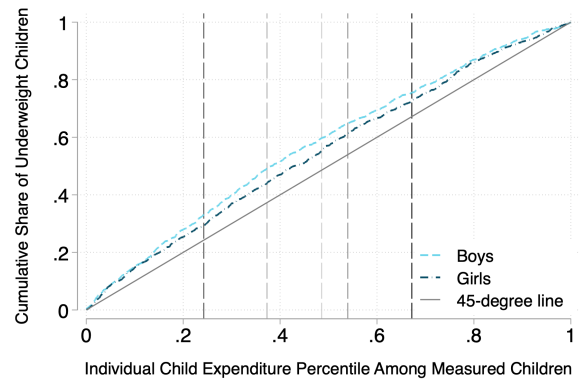
(a) Stunting (Per-Capita)



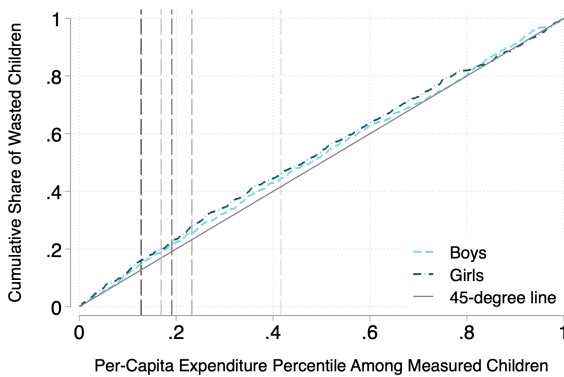
(b) Stunting (Individual)



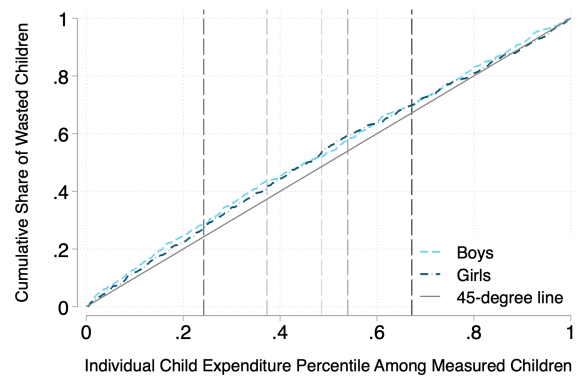
(c) Underweight (Per-Capita)



(d) Underweight (Individual)



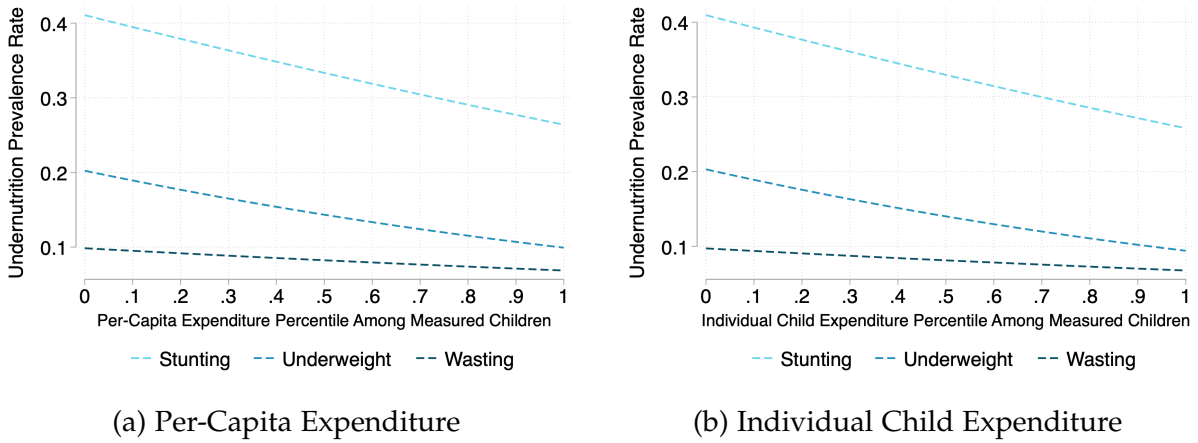
(e) Wasting (Per-Capita)



(f) Wasting (Individual)

Note: Concentration curves of undernutrition ($Z < -2$) for boys and girls, against the within-country percentile of household per-capita expenditure (a, c, e) and individual child expenditure (b, d, f), ranked among measured children. Individual child expenditure is total household expenditure times the per-child resource share. Vertical dashed lines mark the share of measured children below a child poverty line of $0.6 \times \$2.15/\text{day}$, from dark to light: Nigeria, Ethiopia, Ghana, Uganda, and Malawi. Children aged 0–5 years, excluding Z-scores outside $[-5, 5]$.

Figure C3: Undernutrition Prevalence by Expenditure Percentile



Note: Predicted probability of undernutrition ($Z < -2$) by within-country percentile of (a) household per-capita expenditure and (b) individual child expenditure, ranked among measured children. Logit regressions control for the average age and number of men, women, and children, the number of children squared, the share of boys, the education gap, rural residence, child age and sex, and country fixed effects. Children aged 0–5 years, excluding Z-scores outside $[-5, 5]$.

Undernutrition remains high even at the top of the expenditure distribution, at 26% for stunting and 10% for underweight. Two features of the sample are consistent with this. First, the top of the local distribution in these low-income countries does not mean a high standard of living. Second, most children in the sample live in rural areas, where poor sanitation and disease environments affect nutrition regardless of household spending.

C.3: Differences Across Ethnic Groups

A premise of this study is that intrahousehold resource shares and child nutrition vary across ethnic groups within the same country. Table C2 reports one-way ANOVA tests for differences in resource shares across ethnic groups. Equal means are rejected at the 1% level for every member type in every country, except for the household children's share in Uganda. The mixed-model p-values, which allow households in the same enumeration area to be alike, give the same result, although Malawi's per-woman and per-child shares are only significant at the 5% level. Table C3 shows that mean Z-scores and the prevalence of stunting, underweight, and wasting also differ across ethnic groups. Under the ANOVA tests, equality is rejected at the 1% level in every case except stunting in Malawi. The mixed-model p-values are larger for a few outcomes, mostly wasting, and only Nigeria's wasting rate exceeds the 5% level.

The kernel densities in Figures C4 and C5 show the full distributions. The per-child

Table C2: ANOVA Tests for Intrahousehold Resource Shares

Country	Number of Ethnic Groups	Per-Individual η_m	Per-Individual η_f	Per-Individual η_c	Per-Household η_c
Ethiopia	28	4.75 (0.000) [0.003]	6.41 (0.000) [0.000]	4.32 (0.000) [0.000]	2.25 (0.000) [0.001]
Ghana	24	8.29 (0.000) [0.000]	7.40 (0.000) [0.000]	11.57 (0.000) [0.000]	4.21 (0.000) [0.000]
Malawi	8	5.10 (0.000) [0.000]	2.68 (0.009) [0.023]	4.02 (0.000) [0.043]	13.44 (0.000) [0.000]
Nigeria	54	6.87 (0.000) [0.000]	7.05 (0.000) [0.000]	16.19 (0.000) [0.000]	4.91 (0.000) [0.000]
Uganda	21	5.34 (0.000) [0.000]	5.38 (0.000) [0.000]	2.35 (0.001) [0.000]	1.27 (0.190) [0.484]

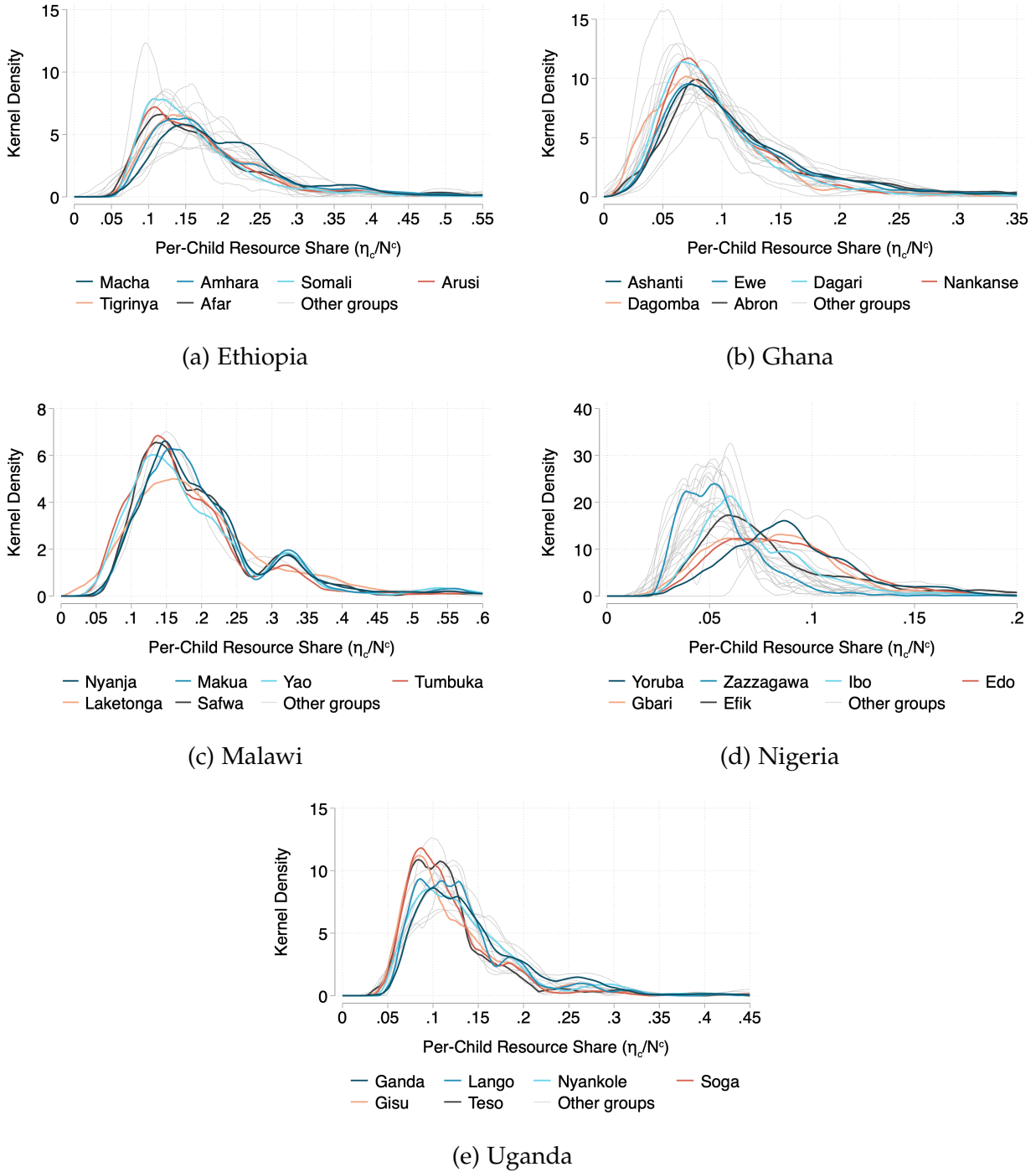
Note: F-statistics, ANOVA p-values (in parentheses), and mixed-model p-values [in brackets] for differences in resource shares across ethnic groups within each country, with one observation per household. Per-individual columns are weighted by the household weight times the number of members of that type, and the per-household column by the household weight. The mixed model has an enumeration-area random effect.

Table C3: ANOVA Tests for Child Undernutrition

Country	Number of Ethnic Groups	HAZ	WAZ	WHZ	Stunted	Underweight	Wasted
Ethiopia	27	4.79 (0.000) [0.029]	6.00 (0.000) [0.000]	5.04 (0.000) [0.000]	6.40 (0.000) [0.005]	3.00 (0.000) [0.001]	2.05 (0.001) [0.038]
Ghana	24	8.65 (0.000) [0.002]	6.98 (0.000) [0.000]	4.65 (0.000) [0.003]	10.23 (0.000) [0.000]	5.86 (0.000) [0.000]	5.06 (0.000) [0.000]
Malawi	8	3.12 (0.003) [0.001]	5.97 (0.000) [0.000]	8.25 (0.000) [0.000]	1.94 (0.059) [0.042]	2.67 (0.009) [0.003]	3.08 (0.003) [0.002]
Nigeria	54	5.24 (0.000) [0.000]	2.58 (0.000) [0.000]	3.40 (0.000) [0.000]	7.30 (0.000) [0.000]	4.23 (0.000) [0.000]	1.65 (0.002) [0.053]
Uganda	20	4.64 (0.000) [0.000]	4.79 (0.000) [0.000]	6.11 (0.000) [0.000]	3.80 (0.000) [0.000]	2.64 (0.000) [0.000]	2.83 (0.000) [0.000]

Note: F-statistics, ANOVA p-values (in parentheses), and mixed-model p-values [in brackets] for differences in child anthropometrics across ethnic groups within each country, using household weights. Stunted, underweight, and wasted children have Z-scores below -2 . The sample excludes Z-scores outside $[-5, 5]$. The mixed model has enumeration-area and household random effects.

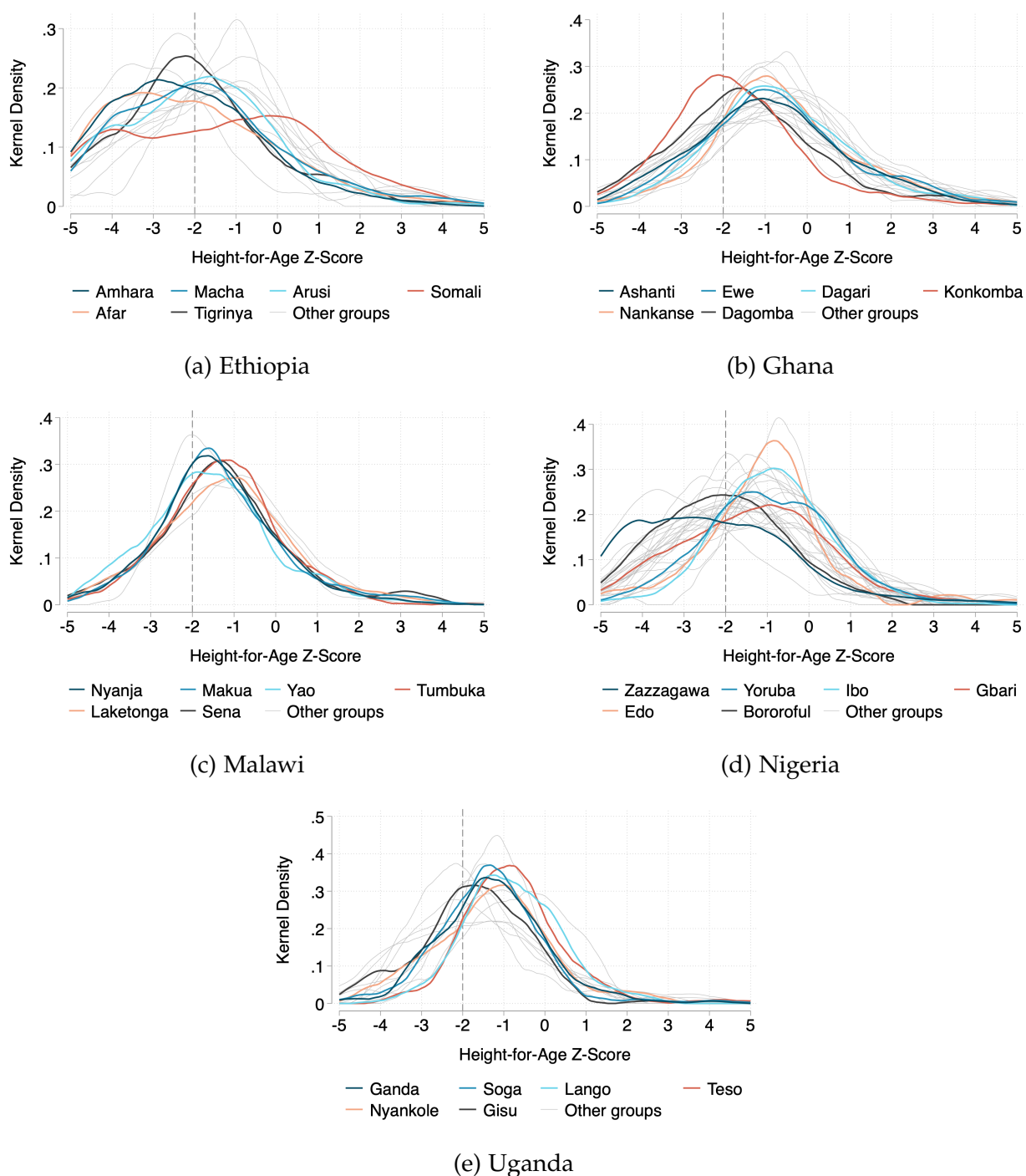
Figure C4: Kernel Densities of Predicted Per-Child Resource Shares by Ethnic Group



Note: Kernel densities of the per-child resource share, η_c/N^c , for the ethnic groups with at least 20 households: 20 in Ethiopia, 21 in Ghana, 8 in Malawi, 25 in Nigeria, and 16 in Uganda. The six largest groups are in color and the others in gray. The horizontal axis stops at the 99th percentile.

resource share densities of different ethnic groups in the same country are shifted hori-

Figure C5: Kernel Densities of Height-for-Age Z-Scores (HAZ) by Ethnic Group



Note: Kernel densities of HAZ for the ethnic groups with at least 20 measured children: 16 in Ethiopia, 21 in Ghana, 9 in Malawi, 30 in Nigeria, and 15 in Uganda. The six largest groups are in color and the others in gray. The dashed line marks the stunting threshold of -2 . Children aged 0–5 years, excluding z-scores outside $[-5, 5]$.

zontally relative to each other. The HAZ densities differ most in their left tails, that is, in

the share of children who are severely stunted. In Nigeria, for instance, the Zazzagawa have a much thicker left tail than the Ibo and Edo. Ethnic groups therefore differ in the shape of the distributions, not only in their means.

Appendix D: Feature Selection

This section details the screen of the Ethnographic Atlas (EA) described in Section 4.2. I first describe the EA variables included in the screen. I then present the random forest results across the 24 runs, the held-out fit of the screen, and two robustness checks: Recursive Feature Elimination with Cross-Validation (RFECV) and a group lasso.

D.1: Variables from the Ethnographic Atlas

Table D1 lists the 56 EA variables included in the screen. I selected these variables based on three criteria. First, I exclude variables with no variation across the ethnic groups

Table D1: Ethnic Characteristics

Identifier	Ethnic Characteristic Category	Identifier	Ethnic Characteristic Category
v1	gathering	v40	predominant type of animal husbandry
v2	hunting	v42	subsistence economy
v3	fishing	v43	descent: major type
v4	animal husbandry	v44	sex differences: metal working
v5	agriculture	v45	sex differences: weaving
v6	mode of marriage	v46	sex differences: leather working
v8	domestic organization	v47	sex differences: pottery making
v9	marital composition: monogamy and polygamy	v48	sex differences: boat building
v11	transfer of residence at marriage: after first years	v49	sex differences: house building
v12	marital residence with kin: after first years	v50	sex differences: gathering
v15	community marriage organization	v51	sex differences: hunting
v17	largest patrilineal kin group	v52	sex differences: fishing
v19	largest matrilineal exogamous group	v53	sex differences: animal husbandry
v21	largest matrilineal kin group	v54	sex differences: agriculture
v23	cousin marriages (allowed)	v66	class stratification
v25	preferred rather than just permitted cousin marriages	v70	type of slavery
v27	kin terms for cousins	v71	former presence of slavery
v28	intensity of agriculture	v72	succession to the office of local headman
v29	major crop type	v73	hereditary succession type to the local headman office
v30	settlement patterns	v74	inheritance rule for real property (land)
v31	mean size of local communities	v75	inheritance distribution for real property (land)
v32	jurisdictional hierarchy of local community	v76	inheritance rule for movable property
v33	jurisdictional hierarchy beyond local community	v77	inheritance distribution for movable property
v34	high gods	v78	norms of premarital sexual behavior of girls
v35	games	v90	political integration
v36	postpartum sex taboos	v94	political succession for the local community
v37	male genital mutilations	v112	trance states
v38	segregation of adolescent boys	v113	societal rigidity

Note: The 56 Ethnographic Atlas variables used in the screen, with categories and coding as in Murdock et al. (1999).

in the sample. Second, I remove redundant or secondary variables, such as alternative forms of marriage. Third, I exclude variables with high rates of missing data or without a clear link to child welfare, such as linguistic affiliation. Most EA variables are nominal, and I expand each into indicator variables for its categories. The ordinal variables ($v1-v5$, $v31-v33$, and $v36$) are rescaled to the $[0, 1]$ interval. Every variable also has an indicator for a missing value, so that households with missing EA data remain in the sample. For the coding of each variable, see Murdock et al. (1999).

D.2: Random Forest Regressor

Table D2 reports the random forest results. I denote each ethnic characteristic as vx_y , where x is the EA variable and y the category. For example, $v6_1$ indicates that bride price or bride wealth is the prevailing marriage transaction. I run the screen for four outcomes (child poverty, stunting, underweight, and wasting) in six samples (each of the five countries and the pooled sample, with each outcome demeaned by country), giving 24 runs. Each forest has 1,000 trees. Ethnic characteristics are constant within an ethnic group, so children with identical characteristics share a trait profile. The five cross-validation folds are grouped by trait profile, so no profile is split between training and test data. Panel A lists the characteristics that rank in the top 10 by impurity importance in at least four runs, and Panel B the 10 characteristics with the largest sum of impurity importance across runs. The table also reports the number of runs in which each characteristic ranks in the top 10 by held-out permutation importance.

Jurisdictional hierarchy beyond the local community ($v33$) ranks in the top 10 in 14 of the 24 runs, followed by animal husbandry ($v4$, 10 runs) and jurisdictional hierarchy of the local community ($v32$, 9 runs). Animal husbandry also ranks in the top 10 by permutation importance most often (9 runs). Bride price ($v6_1$), practiced by 14,381 of the 23,198 households, ranks in the top 10 in four runs.

D.3: Held-Out Fit and the Selected Characteristics

Panel A of Table D3 reports how well the ethnic characteristics predict the outcomes of unseen trait profiles. The held-out R^2 is close to zero in every run. The random forest predicts better than the mean in 5 of the 24 runs and the group lasso in 9, and the largest held-out R^2 is 0.059 (group lasso, stunting in Nigeria). The ethnic characteristics

therefore predict little of an individual child’s outcome, and I use the ranking as a screen rather than as a predictive model.

Panel B compares the six selected characteristics with the number of top 10 placements a random ranking would give. Characteristics with more categories have more chances to enter the top 10, so the comparison is against chance rather than raw counts. Juris-

Table D2: Random Forest Regressor Feature Selection

Label	Ethnic Characteristic	Sample Size	Frequency	Permutation Frequency	Sum of Feature Importance Scores
Panel A: By Frequency					
v33	jurisdictional hierarchy beyond local community	22,100 (-)	14	6	1.06
v4	animal husbandry	23,198 (-)	10	9	0.44
v32	jurisdictional hierarchy of local community	22,131 (-)	9	5	0.39
v31	mean size of local communities	8,813 (-)	7	2	0.39
v2	hunting	23,198 (-)	5	3	0.23
v8_7	domestic organization: small extended families	23,198 (5,266)	5	6	0.22
v5	agriculture	23,198 (-)	5	3	0.21
v54_2	sex differences: agriculture: males appreciably more	18,787 (4,899)	4	2	0.51
v3	fishing	23,198 (-)	4	6	0.47
v6_1	mode of marriage: bride price or wealth, to bride’s family	23,198 (14,381)	4	4	0.46
v40_3	predominant type of animal husbandry: sheep and/ or goats without larger domestic animals	22,176 (11,332)	4	2	0.41
v52_2	sex differences: fishing: males appreciably more	16,327 (1,226)	4	2	0.20
Panel B: By Sum of Scores					
v33	jurisdictional hierarchy beyond local community	22,100 (-)	14	6	1.06
v34_2	high gods: not active in human affairs	12,789 (8,334)	3	5	0.69
v47_8	sex differences: pottery making: activity present	17,958 (2,292)	3	3	0.64
v54_2	sex differences: agriculture: males appreciably more	18,787 (4,899)	4	2	0.51
v30_2	settlement patterns: seminomadic	22,174 (394)	3	2	0.47
v3	fishing	23,198 (-)	4	6	0.47
v6_1	mode of marriage: bride price or wealth, to bride’s family	23,198 (14,381)	4	4	0.46
v4	animal husbandry	23,198 (-)	10	9	0.44
v40_3	predominant type of animal husbandry: sheep and/ or goats without larger domestic animals	22,176 (11,332)	4	2	0.41
v32	jurisdictional hierarchy of local community	22,131 (-)	9	5	0.39

Note: Ethnic characteristics ox_y , where x is the Ethnographic Atlas variable and y the category, from random forests for four outcomes (child poverty, stunting, underweight, and wasting) in six samples (each country and the pooled sample), giving 24 runs. Panel A shows the characteristics in the top 10 by impurity importance in at least four runs, and Panel B the 10 with the largest sum of impurity importance. Permutation Frequency counts the runs in the top 10 by held-out permutation importance. Sample Size is the number of households with the variable recorded, out of 23,198 households, with the number in the category in parentheses.

Table D3: Held-Out Fit of Feature Selection and Selected Ethnic Characteristics

Panel A: Held-Out R^2								
Sample	Poverty		Stunting		Underweight		Wasting	
	RF	GL	RF	GL	RF	GL	RF	GL
All (pooled)	-0.034	0.010	-0.003	-0.001	-0.025	0.000	-0.031	0.000
Ethiopia	-0.113	-0.004	-0.037	-0.008	0.005	0.001	0.014	0.002
Ghana	-0.006	0.038	-0.029	-0.019	-0.001	0.001	0.002	-0.001
Malawi	-0.062	-0.025	-0.001	-0.001	-0.009	0.000	0.003	0.000
Nigeria	-0.090	0.037	-0.031	0.059	-0.009	0.007	-0.005	0.000
Uganda	0.022	0.017	-0.045	-0.015	-0.003	-0.005	-0.003	0.000

Panel B: Selected Ethnic Characteristics							
Label	Ethnic Characteristic	Runs	RF Top 10 (Impurity)	RF Top 10 (Permutation)	Expected by Chance	GL Non-Zero	RFECV Selected
v32	jurisdictional hierarchy of local community	24	9	5	1.5	0	1
v29	major crop type	24	3	1	2.7	5	0
v5	agriculture	24	5	3	1.5	0	3
v37	male genital mutilations	24	7	10	4.6	2	2
v6	mode of marriage	20	4	5	3.4	0	0
v30	settlement patterns	24	8	12	5.2	1	0

Note: Panel A reports the held-out R^2 of the random forest (RF) and group lasso (GL), relative to the training mean, with five cross-validation folds grouped by trait profile. Panel B reports, for the six selected characteristics, the runs in which the characteristic varies, the runs in which any of its categories ranks in the random forest top 10, the top 10 placements expected from a random ranking, the runs in which the group lasso keeps any of its categories (among the 9 runs in which it beats the mean), and the runs in which RFECV selects any of its categories (among the 12 runs in which it selects 20 or fewer features).

dictional hierarchy of the local community enters the top 10 in 9 runs and dependence on agriculture in 5, where a random ranking would give 1.5 each. Settlement patterns (8 runs, with 5.2 expected) and male circumcision (7, with 4.6 expected) also exceed chance, while crop type (3, with 2.7 expected) and marriage transactions (4, with 3.4 expected) only barely do. Crop type is, however, the characteristic the group lasso keeps most often (5 runs). Two characteristics rank highly but are not retained. Animal husbandry is strongly negatively correlated with dependence on agriculture (-0.78 across children), so dependence on agriculture captures it. Jurisdictional hierarchy beyond the local community ranks in the top 10 more often than any other characteristic (14 runs). It is only weakly related to the hierarchy of the local community (-0.08 across children), but it measures political centralization above the community rather than the family, marriage, and production practices studied here (see Section 4.2).

D.4: Feature Selection Robustness

As a first check, Table D4 reports the characteristics selected by RFECV, which removes features one at a time and keeps the set with the lowest cross-validated error. RFECV makes a selection of 20 or fewer features in only 12 of the 24 runs. In the others, it keeps between 27 and 164 features, which is consistent with the weak held-out fit. Among these 12 runs, animal husbandry (*v4*) is selected most often (4 runs), followed by dependence on agriculture (*v5*) and jurisdictional hierarchy beyond the local community (*v33*, 3 runs each).

Table D4: Recursive Feature Elimination with Cross-Validation

Identifier	Ethnic Characteristic	Count
v4	animal husbandry	4
v5	agriculture	3
v33	jurisdictional hierarchy beyond local community	3
v47_8	sex differences: pottery making: activity present	2
v2	hunting	2
v34_2	high gods: not active in human affairs	2
v40_3	predominant type of animal husbandry: sheep and/ or goats without larger domestic animals	2
v3	fishing	2

Note: Ethnic characteristics selected by recursive feature elimination with cross-validation (RFECV) in at least two of the 12 runs in which it keeps 20 or fewer features. Count is the number of these runs.

As a second check, Table D5 reports the results of a group lasso, which penalizes the categories of each EA variable as a group. Because the group lasso cannot handle missing values, missing ordinal values are set to zero, with the missing-value indicators recording that they are missing. The group lasso emphasizes major crop type, with cereal grains (*v29_6*, 5 runs) and roots or tubers (*v29_5*, 4 runs) among the most frequent characteristics, as well as sex differences in fishing (*v52_1*), high gods (*v34_2*), and the former presence of slavery (*v71_2*). Bride price (*v6_1*) has one of the largest sums of absolute coefficients, but none of its top 10 placements come from runs in which the group lasso predicts better than the mean. Both the random forest and the group lasso rank high gods (*v34_2*) and the type of animal husbandry (*v40_3*) highly.

Table D5: Group Lasso Regressor Feature Selection

Label	Ethnic Characteristic	Sample Size	Frequency	Held-Out Gain	Sum of Absolute Coefficients
Panel A: By Frequency					
v29_6	major crop type: cereal grains	22,192 (15,448)	5	4	0.11
v52_1	sex differences: fishing: males only	16,327 (11,297)	5	3	0.05
v34_2	high gods: not active in human affairs	12,789 (8,334)	4	4	0.13
v29_5	major crop type: roots or tubers	22,192 (5,569)	4	4	0.10
v71_2	former presence of slavery: formerly present but not currently existing	22,103 (12,244)	4	3	0.04
v66_1	class stratification: absence among freemen	20,656 (10,637)	3	3	0.12
v40_3	predominant type of animal husbandry: sheep and/ or goats without larger domestic animals	22,176 (11,332)	3	2	0.11
v40_7	predominant type of animal husbandry: bovine animals	22,176 (9,456)	3	3	0.09
v52_9	sex differences: fishing: absent or unimportant activity	16,327 (3,672)	3	1	0.07
v34_4	high gods: supportive of human morality	12,789 (2,777)	3	3	0.05
v71_1	former presence of slavery: absent or exists currently and in past	22,103 (9,859)	3	2	0.03
v77_4	inheritance distribution for movable property: primogeniture	21,197 (15,540)	3	2	0.02
Panel B: By Sum of Absolute Coefficients					
v34_2	high gods: not active in human affairs	12,789 (8,334)	4	4	0.13
v66_1	class stratification: absence among freemen	20,656 (10,637)	3	3	0.12
v29_6	major crop type: cereal grains	22,192 (15,448)	5	4	0.11
v40_3	predominant type of animal husbandry: sheep and/ or goats without larger domestic animals	22,176 (11,332)	3	2	0.11
v29_5	major crop type: roots or tubers	22,192 (5,569)	4	4	0.10
v6_1	mode of marriage: bride price or wealth, to bride's family	23,198 (14,381)	2	0	0.10
v40_7	predominant type of animal husbandry: bovine animals	22,176 (9,456)	3	3	0.09
v47_1	sex differences: pottery making: males only	17,958 (1,830)	2	2	0.08
v28_6	intensity of agriculture: intensive irrigated agriculture	22,192 (472)	2	2	0.07
v47_8	sex differences: pottery making: activity present	17,958 (2,292)	1	0	0.07

Note: Ethnic characteristics from group lasso regressions for the same runs as Table D2. Panel A shows the characteristics in the top 10 with a non-zero coefficient in at least three runs, and Panel B the 10 with the largest sum of absolute coefficients. Held-Out Gain counts the top 10 placements from the 9 runs in which the group lasso predicts held-out trait profiles better than the mean. Sample Size as in Table D2.

Appendix E: The Role of Ancestral Ethnic Traits

This section presents additional results for the Phase 2 estimation in Sections 4.3–4.5: the predicted resource shares and poverty rates, the first stage and the sharing-rule coefficients, descriptive statistics by ethnic characteristic, average marginal effects by country, the decomposition with its intervals, and the gender channels.

E.1: Resource Shares and Poverty

As shown in Table E1, the per-person resource shares from the pooled Phase 2 estimation stay close to the baseline in Table 2. Per-child shares are within 1 percentage point in every country, and per-man and per-woman shares within 3 percentage points. The largest change is for men in Uganda, whose per-person share in family-type households falls from 0.27 to 0.24. Table E2 reports the corresponding poverty rates. With the calorie-adjusted individual poverty lines, 38% of children in Ethiopia, 38% in Ghana, 54% in Malawi, 70% in Nigeria, and 34% in Uganda are poor. The largest change from the baseline is in Nigeria, where the per-child share falls from 0.07 to 0.06.

Table E1: Predicted Resource Shares Accounting for Ethnic Characteristics

Country	Men, Women, Children Households				All Family-Type Households			
	Number of Households	Per-Man Share	Per-Woman Share	Per-Child Share	Number of Households	Per-Man Share	Per-Woman Share	Per-Child Share
Ethiopia	3,635	0.22 (0.08)	0.21 (0.07)	0.17 (0.07)	5,214	0.25 (0.13)	0.24 (0.10)	0.18 (0.09)
Ghana	4,402	0.33 (0.10)	0.24 (0.10)	0.09 (0.05)	7,051	0.37 (0.13)	0.29 (0.15)	0.11 (0.07)
Malawi	5,532	0.24 (0.07)	0.20 (0.08)	0.18 (0.08)	7,720	0.27 (0.10)	0.23 (0.11)	0.20 (0.10)
Nigeria	2,252	0.32 (0.10)	0.26 (0.12)	0.06 (0.03)	3,113	0.34 (0.12)	0.29 (0.15)	0.06 (0.03)
Uganda	1,711	0.22 (0.09)	0.25 (0.08)	0.14 (0.06)	2,318	0.24 (0.12)	0.27 (0.11)	0.15 (0.07)

Note: Means and standard deviations (in parentheses) of per-person resource shares, η_i/N^i , over men, women, and children, from the pooled Phase 2 estimation, using household weights. Family-type households have men, women, and children; men and women; women and children; or men and children.

Table E2: Predicted Poverty Rates Accounting for Ethnic Characteristics

Country	Per-Capita Poverty Rate	Unadjusted Individual Poverty Rate			Calorie-Adjusted Individual Poverty Rate		
		Men	Women	Children	Men	Women	Children
Ethiopia	0.48	0.40	0.42	0.58	0.43	0.32	0.38
Ghana	0.22	0.06	0.18	0.63	0.08	0.13	0.38
Malawi	0.71	0.58	0.71	0.78	0.63	0.62	0.54
Nigeria	0.27	0.03	0.14	0.88	0.05	0.09	0.70
Uganda	0.36	0.24	0.17	0.58	0.29	0.10	0.34

Note: Poverty headcount rates at the \$2.15/day extreme poverty line (2017 US\$ PPP) for the households of the pooled Phase 2 estimation, using household weights. Individual rates use total household expenditure times the individual's resource share. Calorie-adjusted rates rescale the poverty line by age- and sex-specific caloric requirements, with \$2.15/day for adults aged 15–45 (Brown et al., 2021).

E.2: Sharing-Rule Coefficients and the First Stage

Table E3 shows that, in the first stage of the control function, the excluded instruments are strong predictors of log total expenditure, with F-statistics between 28.8 and 133.1 for households with men, women, and children. They are weaker in the smaller compositions of Nigeria and Uganda, where the F-statistics are about 6. Table E4 reports the coefficients of the ethnic characteristics in the sharing rule of the pooled Phase 2 estimation, from which the average marginal effects in Table 3 are computed.

Table E3: First Stage of the Control Function

Country	Men, Women, and Children			Men and Women			Women and Children		
	F	R ²	N	F	R ²	N	F	R ²	N
Ethiopia	66.5	0.59	3,718	11.0	0.63	777	12.1	0.56	719
Ghana	45.2	0.52	4,533	19.3	0.60	1,344	17.2	0.57	1,174
Malawi	133.1	0.55	5,605	24.8	0.62	894	20.3	0.52	1,221
Nigeria	62.4	0.45	2,287	15.9	0.55	593	6.0	0.60	233
Uganda	28.8	0.47	1,763	6.3	0.68	188	5.9	0.54	367

Note: First-stage regressions of log total expenditure on the excluded instruments and all regressors of the Engel-curve system, by country and household composition; households with men and children are pooled with those with men, women, and children. F is the F-statistic of the excluded instruments: log total income, its square, an indicator for zero income, survey-month indicators, and wealth indicators.

Table E4: Coefficients of the Ethnic Characteristics in the Sharing Rule

	Children's Index	Women's Index
Independent vs. Extended Families	0.092 (0.042)	0.002 (0.040)
Clan-Barrios vs. Extended Families	0.030 (0.032)	−0.047 (0.029)
Easy-Harvestable vs. Other Crops	0.045 (0.033)	0.050 (0.032)
Agriculture 0–25% vs. 26–75%	−0.313 (0.086)	−0.161 (0.074)
Agriculture 76–100% vs. 26–75%	0.014 (0.037)	0.024 (0.033)
Circumcision at 0–5 vs. Absent/Older	−0.066 (0.032)	0.060 (0.029)
Bride Price vs. Other Transactions	0.032 (0.037)	0.036 (0.033)
Nomadic vs. Non-Nomadic	−0.011 (0.088)	0.169 (0.075)
Households	25,416	

Note: Coefficients of the ethnic characteristics in the children's and women's indices of the logistic sharing rule of the pooled Phase 2 estimation, relative to men. The coefficients are common to all countries; all other coefficients are country-specific. Robust standard errors in parentheses.

E.3: Descriptive Statistics by Ethnic Characteristic

For each country, Tables E5–E9 report the number of children, resource shares, child poverty, and child undernutrition for each category of the six ethnic characteristics. These raw means are the starting point for the gaps decomposed in Section 4.4.

Table E5: Summary Statistics by Ethnic Characteristics: Ethiopia

	Number of Children (Number of Households)	Per-Child Share Mean (sd)	Children's Share Mean (sd)	Child Poor Mean (sd)	Child Stunted Mean (sd)	Child Underweight Mean (sd)	Child Wasted Mean (sd)
Total Sample	11,472 (4,437)	0.181 (0.089)	0.490 (0.120)	0.380 (0.485)	0.526 (0.499)	0.233 (0.423)	0.106 (0.308)
Jurisdictional Hierarchy (v32)							
Independent Families	3,191 (1,150)	0.176 (0.087)	0.515 (0.119)	0.406 (0.491)	0.418 (0.494)	0.192 (0.394)	0.092 (0.289)
Extended Families	8,256 (3,279)	0.184 (0.091)	0.477 (0.119)	0.361 (0.480)	0.594 (0.491)	0.260 (0.439)	0.114 (0.318)
Clan-Barrios	25 (8)	0.166 (0.041)	0.517 (0.124)	0.880 (0.332)	0.000 (0.000)	0.000 (0.000)	0.125 (0.354)
Principal Type of Crop (v29)							
Easy Harvestable	1,220 (421)	0.178 (0.080)	0.529 (0.118)	0.440 (0.497)	0.453 (0.499)	0.150 (0.357)	0.067 (0.251)
Other	10,252 (4,016)	0.182 (0.091)	0.482 (0.119)	0.366 (0.482)	0.540 (0.499)	0.250 (0.433)	0.114 (0.317)
Dependence on Agriculture (v5)							
0-25%	2,575 (905)	0.137 (0.062)	0.457 (0.106)	0.565 (0.496)	0.455 (0.498)	0.185 (0.389)	0.176 (0.381)
26-75%	8,323 (3,340)	0.185 (0.091)	0.487 (0.121)	0.363 (0.481)	0.541 (0.498)	0.247 (0.431)	0.105 (0.307)
76-100%	574 (192)	0.173 (0.082)	0.539 (0.110)	0.428 (0.495)	0.412 (0.495)	0.128 (0.335)	0.075 (0.265)
Male Circumcision (v37)							
0-5 Years	3,413 (1,386)	0.187 (0.094)	0.469 (0.116)	0.421 (0.494)	0.593 (0.492)	0.296 (0.457)	0.118 (0.323)
Absent/Older Ages	8,059 (3,051)	0.178 (0.087)	0.503 (0.121)	0.358 (0.479)	0.489 (0.500)	0.199 (0.399)	0.100 (0.299)
Transactions at Marriage (v6)							
Bride/Token Bride Price	7,720 (2,934)	0.178 (0.086)	0.499 (0.121)	0.355 (0.479)	0.501 (0.500)	0.208 (0.406)	0.106 (0.308)
Other Forms	3,752 (1,503)	0.186 (0.094)	0.478 (0.118)	0.417 (0.493)	0.562 (0.496)	0.270 (0.444)	0.106 (0.308)
Settlement Patterns (v30)							
Nomadic-Type	4,404 (1,547)	0.161 (0.083)	0.490 (0.114)	0.416 (0.493)	0.418 (0.494)	0.194 (0.396)	0.121 (0.326)
Non-Nomadic-Type	7,068 (2,890)	0.187 (0.090)	0.490 (0.122)	0.370 (0.483)	0.559 (0.497)	0.245 (0.430)	0.102 (0.302)

Note: Means and standard deviations (in parentheses) for the children in the households of the pooled Phase 2 estimation, by the ethnic characteristic of their household, using household weights. The children's share is averaged over households. Child poverty uses the calorie-adjusted poverty line. Stunting, underweight, and wasting are for children under five with Z-scores in $[-5, 5]$. A dash marks a category with no children.

Table E6: Summary Statistics by Ethnic Characteristics: Ghana

	Number of Children (Number of Households)	Per-Child Share Mean (sd)	Children's Share Mean (sd)	Child Poor Mean (sd)	Child Stunted Mean (sd)	Child Underweight Mean (sd)	Child Wasted Mean (sd)
Total Sample	13,062 (5,707)	0.112 (0.067)	0.245 (0.080)	0.384 (0.486)	0.264 (0.441)	0.125 (0.330)	0.135 (0.342)
Jurisdictional Hierarchy (v32)							
Independent Families	195 (75)	0.089 (0.055)	0.227 (0.081)	0.763 (0.426)	0.248 (0.437)	0.184 (0.392)	0.251 (0.438)
Extended Families	4,225 (1,741)	0.101 (0.062)	0.229 (0.075)	0.478 (0.500)	0.279 (0.449)	0.143 (0.351)	0.115 (0.319)
Clan-Barrios	8,642 (3,891)	0.117 (0.068)	0.252 (0.081)	0.335 (0.472)	0.257 (0.437)	0.114 (0.318)	0.144 (0.351)
Principal Type of Crop (v29)							
Easy Harvestable	7,163 (3,281)	0.118 (0.068)	0.252 (0.080)	0.306 (0.461)	0.249 (0.433)	0.110 (0.312)	0.131 (0.338)
Other	5,899 (2,426)	0.097 (0.061)	0.226 (0.077)	0.564 (0.496)	0.298 (0.458)	0.158 (0.364)	0.145 (0.352)
Dependence on Agriculture (v5)							
0-25%	—	—	—	—	—	—	—
26-75%	11,577 (5,043)	0.113 (0.067)	0.247 (0.080)	0.380 (0.486)	0.262 (0.440)	0.124 (0.330)	0.139 (0.346)
76-100%	1,485 (664)	0.105 (0.061)	0.229 (0.075)	0.407 (0.491)	0.279 (0.449)	0.126 (0.333)	0.108 (0.310)
Male Circumcision (v37)							
0-5 Years	2,789 (1,270)	0.106 (0.065)	0.229 (0.077)	0.416 (0.493)	0.270 (0.444)	0.149 (0.356)	0.123 (0.329)
Absent/Older Ages	10,273 (4,437)	0.114 (0.067)	0.249 (0.080)	0.374 (0.484)	0.263 (0.440)	0.118 (0.322)	0.139 (0.346)
Transactions at Marriage (v6)							
Bride/Token Bride Price	12,132 (5,406)	0.114 (0.067)	0.246 (0.080)	0.361 (0.480)	0.250 (0.433)	0.118 (0.322)	0.137 (0.344)
Other Forms	930 (301)	0.068 (0.043)	0.212 (0.061)	0.798 (0.401)	0.476 (0.500)	0.223 (0.417)	0.105 (0.307)
Settlement Patterns (v30)							
Nomadic-Type	—	—	—	—	—	—	—
Non-Nomadic-Type	13,062 (5,707)	0.112 (0.067)	0.245 (0.080)	0.384 (0.486)	0.264 (0.441)	0.125 (0.330)	0.135 (0.342)

Note: Means and standard deviations (in parentheses) for the children in the households of the pooled Phase 2 estimation, by the ethnic characteristic of their household, using household weights. The children's share is averaged over households. Child poverty uses the calorie-adjusted poverty line. Stunting, underweight, and wasting are for children under five with Z-scores in $[-5, 5]$. A dash marks a category with no children.

Table E7: Summary Statistics by Ethnic Characteristics: Malawi

	Number of Children (Number of Households)	Per-Child Share Mean (sd)	Children's Share Mean (sd)	Child Poor Mean (sd)	Child Stunted Mean (sd)	Child Underweight Mean (sd)	Child Wasted Mean (sd)
Total Sample	15,852 (6,826)	0.202 (0.101)	0.469 (0.124)	0.536 (0.499)	0.334 (0.472)	0.105 (0.307)	0.034 (0.182)
Jurisdictional Hierarchy (v32)							
Independent Families	1,342 (577)	0.209 (0.100)	0.479 (0.117)	0.490 (0.500)	0.274 (0.446)	0.101 (0.302)	0.049 (0.217)
Extended Families	14,510 (6,249)	0.201 (0.102)	0.469 (0.124)	0.538 (0.499)	0.337 (0.473)	0.105 (0.307)	0.034 (0.180)
Clan-Barrios	–	–	–	–	–	–	–
Principal Type of Crop (v29)							
Easy Harvestable	1,287 (578)	0.205 (0.110)	0.464 (0.121)	0.273 (0.446)	0.269 (0.444)	0.074 (0.262)	0.030 (0.170)
Other	14,565 (6,248)	0.202 (0.101)	0.469 (0.124)	0.546 (0.498)	0.337 (0.473)	0.106 (0.308)	0.035 (0.183)
Dependence on Agriculture (v5)							
0-25%	–	–	–	–	–	–	–
26-75%	15,852 (6,826)	0.202 (0.101)	0.469 (0.124)	0.536 (0.499)	0.334 (0.472)	0.105 (0.307)	0.034 (0.182)
76-100%	–	–	–	–	–	–	–
Male Circumcision (v37)							
0-5 Years	–	–	–	–	–	–	–
Absent/Older Ages	14,942 (6,411)	0.202 (0.101)	0.469 (0.124)	0.545 (0.498)	0.335 (0.472)	0.106 (0.308)	0.034 (0.182)
Transactions at Marriage (v6)							
Bride/Token Bride Price	2,886 (1,245)	0.194 (0.099)	0.455 (0.115)	0.377 (0.485)	0.307 (0.462)	0.082 (0.275)	0.029 (0.168)
Other Forms	12,966 (5,581)	0.203 (0.102)	0.471 (0.125)	0.556 (0.497)	0.338 (0.473)	0.108 (0.310)	0.035 (0.184)
Settlement Patterns (v30)							
Nomadic-Type	–	–	–	–	–	–	–
Non-Nomadic-Type	15,852 (6,826)	0.202 (0.101)	0.469 (0.124)	0.536 (0.499)	0.334 (0.472)	0.105 (0.307)	0.034 (0.182)

Note: Means and standard deviations (in parentheses) for the children in the households of the pooled Phase 2 estimation, by the ethnic characteristic of their household, using household weights. The children's share is averaged over households. Child poverty uses the calorie-adjusted poverty line. Stunting, underweight, and wasting are for children under five with Z-scores in $[-5, 5]$. A dash marks a category with no children.

Table E8: Summary Statistics by Ethnic Characteristics: Nigeria

	Number of Children (Number of Households)	Per-Child Share Mean (sd)	Children's Share Mean (sd)	Child Poor Mean (sd)	Child Stunted Mean (sd)	Child Underweight Mean (sd)	Child Wasted Mean (sd)
Total Sample	6,728 (2,520)	0.062 (0.030)	0.172 (0.069)	0.704 (0.456)	0.358 (0.480)	0.194 (0.396)	0.078 (0.268)
Jurisdictional Hierarchy (v32)							
Independent Families	259 (85)	0.049 (0.016)	0.152 (0.045)	0.759 (0.428)	0.509 (0.504)	0.476 (0.503)	0.112 (0.318)
Extended Families	3,121 (1,029)	0.052 (0.023)	0.170 (0.067)	0.815 (0.388)	0.463 (0.499)	0.238 (0.426)	0.083 (0.276)
Clan-Barrios	3,348 (1,406)	0.074 (0.034)	0.174 (0.072)	0.573 (0.495)	0.238 (0.426)	0.123 (0.328)	0.070 (0.255)
Principal Type of Crop (v29)							
Easy Harvestable	3,364 (1,424)	0.073 (0.034)	0.173 (0.071)	0.585 (0.493)	0.228 (0.420)	0.124 (0.330)	0.068 (0.253)
Other	3,364 (1,096)	0.052 (0.022)	0.170 (0.066)	0.811 (0.392)	0.482 (0.500)	0.261 (0.439)	0.087 (0.282)
Dependence on Agriculture (v5)							
0-25%	268 (91)	0.044 (0.020)	0.137 (0.054)	0.785 (0.412)	0.329 (0.473)	0.150 (0.359)	0.093 (0.292)
26-75%	4,179 (1,457)	0.056 (0.026)	0.171 (0.067)	0.776 (0.417)	0.438 (0.496)	0.239 (0.427)	0.078 (0.269)
76-100%	2,281 (972)	0.076 (0.034)	0.176 (0.073)	0.546 (0.498)	0.201 (0.401)	0.108 (0.311)	0.076 (0.265)
Male Circumcision (v37)							
0-5 Years	3,195 (1,353)	0.073 (0.034)	0.173 (0.072)	0.568 (0.495)	0.211 (0.408)	0.120 (0.325)	0.070 (0.255)
Absent/Older Ages	3,533 (1,167)	0.052 (0.022)	0.170 (0.065)	0.817 (0.387)	0.493 (0.500)	0.262 (0.440)	0.085 (0.279)
Transactions at Marriage (v6)							
Bride/Token Bride Price	5,967 (2,215)	0.061 (0.030)	0.171 (0.069)	0.716 (0.451)	0.368 (0.482)	0.207 (0.405)	0.081 (0.273)
Other Forms	761 (305)	0.067 (0.028)	0.173 (0.069)	0.611 (0.488)	0.285 (0.452)	0.099 (0.299)	0.054 (0.226)
Settlement Patterns (v30)							
Nomadic-Type	194 (64)	0.044 (0.020)	0.137 (0.049)	0.864 (0.344)	0.617 (0.492)	0.267 (0.447)	0.157 (0.368)
Non-Nomadic-Type	6,534 (2,456)	0.062 (0.030)	0.172 (0.069)	0.701 (0.458)	0.354 (0.478)	0.193 (0.395)	0.077 (0.266)

Note: Means and standard deviations (in parentheses) for the children in the households of the pooled Phase 2 estimation, by the ethnic characteristic of their household, using household weights. The children's share is averaged over households. Child poverty uses the calorie-adjusted poverty line. Stunting, underweight, and wasting are for children under five with Z-scores in $[-5, 5]$. A dash marks a category with no children.

Table E9: Summary Statistics by Ethnic Characteristics: Uganda

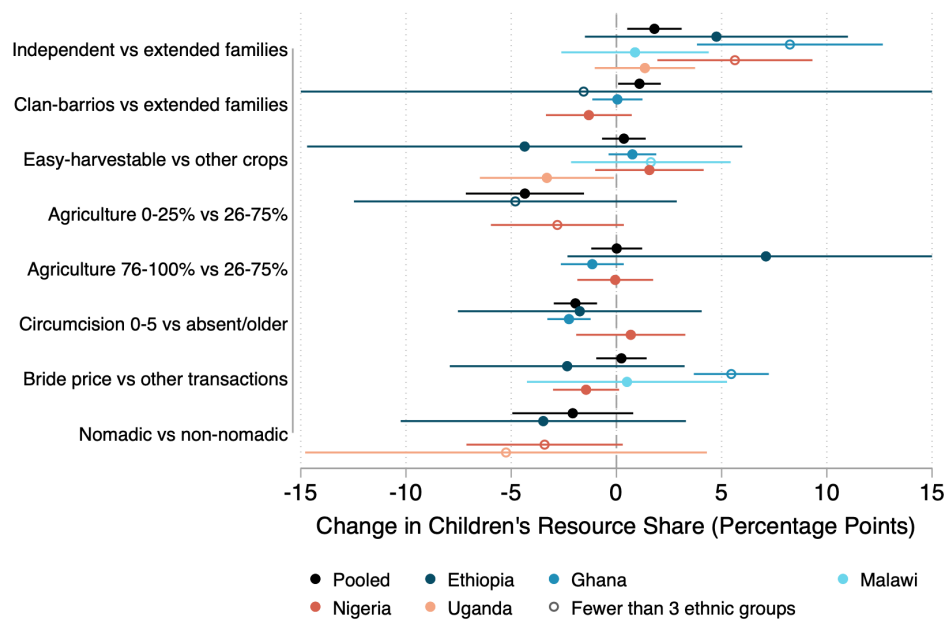
	Number of Children (Number of Households)	Per-Child Share Mean (sd)	Children's Share Mean (sd)	Child Poor Mean (sd)	Child Stunted Mean (sd)	Child Underweight Mean (sd)	Child Wasted Mean (sd)
Total Sample	6,374 (2,130)	0.149 (0.074)	0.423 (0.084)	0.338 (0.473)	0.242 (0.428)	0.071 (0.257)	0.033 (0.178)
Jurisdictional Hierarchy (v32)							
Independent Families	3,227 (1,103)	0.156 (0.077)	0.434 (0.086)	0.267 (0.442)	0.263 (0.440)	0.074 (0.262)	0.035 (0.183)
Extended Families	3,147 (1,027)	0.139 (0.069)	0.408 (0.078)	0.434 (0.496)	0.218 (0.413)	0.067 (0.251)	0.031 (0.172)
Clan-Barrios	–	–	–	–	–	–	–
Principal Type of Crop (v29)							
Easy Harvestable	2,689 (902)	0.153 (0.075)	0.435 (0.085)	0.265 (0.441)	0.266 (0.442)	0.089 (0.285)	0.019 (0.138)
Other	3,685 (1,228)	0.145 (0.073)	0.413 (0.082)	0.399 (0.490)	0.224 (0.417)	0.057 (0.233)	0.043 (0.203)
Dependence on Agriculture (v5)							
0-25%	–	–	–	–	–	–	–
26-75%	6,374 (2,130)	0.149 (0.074)	0.423 (0.084)	0.338 (0.473)	0.242 (0.428)	0.071 (0.257)	0.033 (0.178)
76-100%	–	–	–	–	–	–	–
Male Circumcision (v37)							
0-5 Years	–	–	–	–	–	–	–
Absent/Older Ages	6,374 (2,130)	0.149 (0.074)	0.423 (0.084)	0.338 (0.473)	0.242 (0.428)	0.071 (0.257)	0.033 (0.178)
Transactions at Marriage (v6)							
Bride/Token Bride Price	6,374 (2,130)	0.149 (0.074)	0.423 (0.084)	0.338 (0.473)	0.242 (0.428)	0.071 (0.257)	0.033 (0.178)
Other Forms	–	–	–	–	–	–	–
Settlement Patterns (v30)							
Nomadic-Type	24 (8)	0.132 (0.051)	0.434 (0.079)	0.791 (0.415)	0.277 (0.472)	0.121 (0.344)	0.000 (0.000)
Non-Nomadic-Type	6,350 (2,122)	0.149 (0.074)	0.423 (0.084)	0.336 (0.472)	0.242 (0.428)	0.071 (0.256)	0.033 (0.179)

Note: Means and standard deviations (in parentheses) for the children in the households of the pooled Phase 2 estimation, by the ethnic characteristic of their household, using household weights. The children's share is averaged over households. Child poverty uses the calorie-adjusted poverty line. Stunting, underweight, and wasting are for children under five with Z-scores in $[-5, 5]$. A dash marks a category with no children.

E.4: Average Marginal Effects by Country

Table 3 reports average marginal effects from the pooled Phase 2 estimation, in which each ethnic characteristic has one coefficient in all countries. Figures E1–E3 compare these with average marginal effects from separate Phase 2 estimations for each country, for the children’s, women’s, and men’s resource shares. The country estimates are far less precise, particularly where a category covers fewer than three ethnic groups.

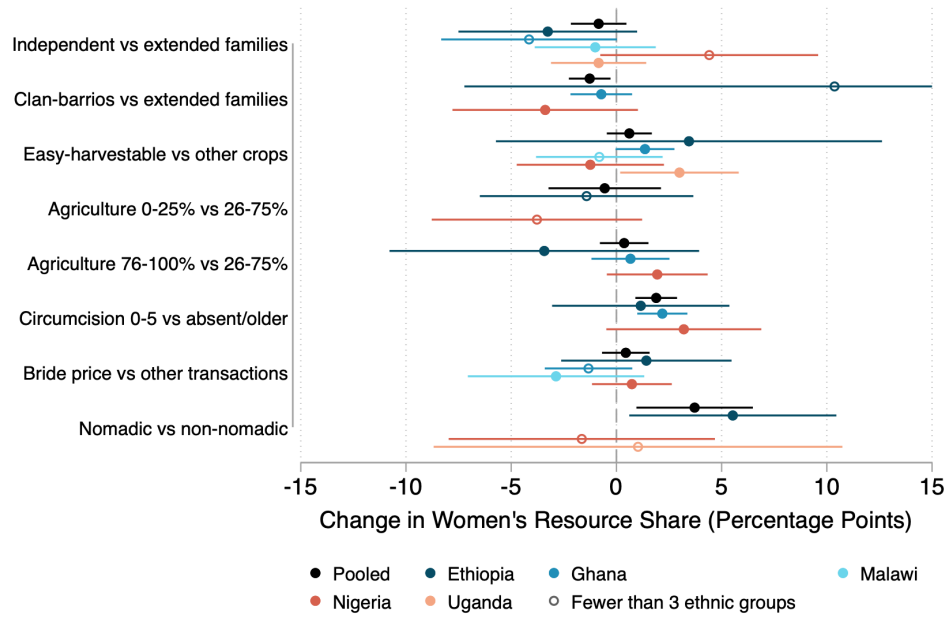
Figure E1: Ethnic Characteristics and the Children’s Resource Share, Pooled and by Country



Note: Average marginal effects on the children’s resource share, in percentage points, with 95% confidence intervals, from the pooled Phase 2 estimation (black) and the country-specific Phase 2 estimations. Hollow markers indicate comparisons with fewer than three ethnic groups on either side. Intervals are cut at ± 15 percentage points.

Table E10 tests whether each characteristic’s coefficients are the same in every country where it varies. Equality is rejected for independent families and bride price, but not for the other six comparisons. For independent families, the country estimates for the children’s share are all positive and differ mainly in size. For bride price, they differ in sign, positive in Ghana, close to zero in Malawi, and negative in Ethiopia and Nigeria, so the pooled estimate averages over opposite country patterns. Early circumcision, in contrast, is positively associated with the women’s share in all three countries where it varies.

Figure E2: Ethnic Characteristics and the Women's Resource Share, Pooled and by Country



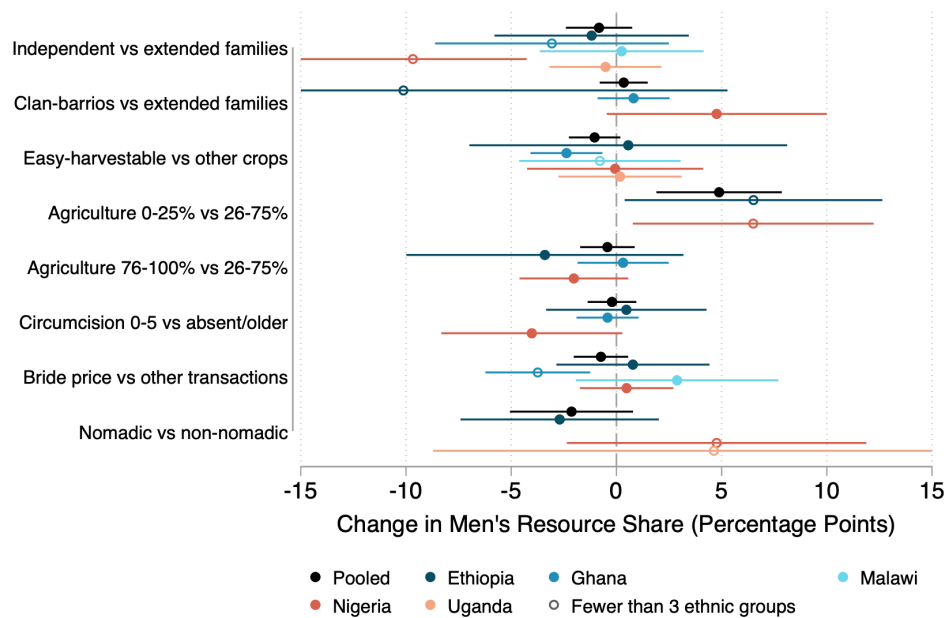
Note: Average marginal effects on the women's resource share, in percentage points, with 95% confidence intervals, from the pooled Phase 2 estimation (black) and the country-specific Phase 2 estimations. Hollow markers indicate comparisons with fewer than three ethnic groups on either side. Intervals are cut at ± 15 percentage points.

Table E10: Equality of the Ethnic Characteristic Coefficients across Countries

Ethnic Characteristic	Countries	Q	Degrees of Freedom	p-value
Independent Families	5	24.13	8	0.002
Clan-Barrios	3	4.49	4	0.344
Easy-Harvestable Crops	5	10.77	8	0.215
Agriculture 0–25%	2	0.02	2	0.991
Agriculture 76–100%	3	4.70	4	0.319
Circumcision at 0–5	3	4.60	4	0.331
Bride Price	4	43.84	6	0.000
Nomadic	3	5.02	4	0.285

Note: Minimum-distance test that each characteristic's coefficients in the children's and women's sharing rules are equal across the countries where it varies, using the country-specific Phase 2 estimations: $Q = \sum_c (\hat{\delta}_c - \bar{\delta})' \hat{V}_c^{-1} (\hat{\delta}_c - \bar{\delta})$, where $\bar{\delta}$ is the precision-weighted mean, distributed χ^2 with $2(C - 1)$ degrees of freedom.

Figure E3: Ethnic Characteristics and the Men's Resource Share, Pooled and by Country



Note: Average marginal effects on the men's resource share, in percentage points, with 95% confidence intervals, from the pooled Phase 2 estimation (black) and the country-specific Phase 2 estimations. Hollow markers indicate comparisons with fewer than three ethnic groups on either side. Intervals are cut at ± 15 percentage points.

E.5: Decomposition of the Gaps between Trait Groups

The decomposition in Section 4.4 is reported with 95% intervals in Tables E11–E13: for the children's resource share and child poverty shown in Figure 2, for the per-child resource share and log per-child consumption, and for stunting.

Table E11: Decomposition of the Gaps between Trait Groups, with 95% Intervals

	Raw Gap	Own Trait	Other Traits	Household Formation	Education Gap	Rural	Household Budget	Remainder
<i>Panel A: Children's Resource Share (Percentage Points)</i>								
Independent vs. Extended Families	2.99 [0.53, 5.01]	2.09 [0.56, 3.47]	0.41 [−1.31, 2.31]	0.49 [−0.74, 1.37]	−0.06 [−0.21, 0.04]	0.09 [−0.47, 0.63]	−	−0.04 [−0.21, 0.16]
Clan-Barrios vs. Extended Families	0.84 [−1.54, 3.01]	0.82 [0.06, 1.63]	−0.49 [−1.42, 0.55]	−1.33 [−2.82, 0.32]	0.01 [−0.10, 0.11]	2.02 [0.08, 3.96]	−	−0.18 [−0.50, 0.19]
Easy-Harvestable vs. Other Crops	1.74 [−0.27, 3.56]	0.31 [−0.64, 1.41]	0.63 [−0.49, 1.88]	−0.38 [−1.73, 0.95]	−0.01 [−0.11, 0.07]	1.38 [0.06, 2.94]	−	−0.19 [−0.41, 0.06]
Agriculture 0–25% vs. 26–75%	−3.17 [−6.74, −0.11]	−4.45 [−8.03, −1.28]	−1.34 [−4.12, 1.22]	2.64 [−0.49, 4.66]	0.01 [−0.03, 0.09]	0.06 [−0.62, 0.66]	−	−0.08 [−0.48, 0.27]
Agriculture 76–100% vs. 26–75%	1.18 [−1.40, 4.50]	0.01 [−1.10, 1.11]	0.19 [−0.82, 2.20]	−1.07 [−2.68, 2.11]	0.01 [−0.11, 0.14]	2.11 [−0.25, 4.47]	−	−0.07 [−0.37, 0.29]
Circumcision at 0–5 vs. Absent/Older	−1.28 [−3.74, 1.29]	−1.79 [−2.91, −0.75]	0.44 [−0.87, 1.77]	−1.48 [−2.77, −0.36]	0.03 [−0.08, 0.14]	1.55 [0.13, 3.49]	−	−0.03 [−0.30, 0.24]
Bride Price vs. Other Transactions	1.04 [−1.91, 3.77]	0.23 [−0.73, 1.42]	0.34 [−1.27, 1.52]	0.70 [−0.35, 1.73]	−0.01 [−0.09, 0.08]	−0.19 [−1.79, 1.89]	−	−0.02 [−0.27, 0.32]
Nomadic vs. Non-Nomadic	−0.24 [−6.39, 3.49]	−2.37 [−5.96, 0.99]	0.80 [−5.96, 3.91]	1.45 [−0.40, 4.16]	−0.04 [−0.18, 0.14]	−0.10 [−1.52, 0.31]	−	0.01 [−0.34, 0.20]
<i>Panel B: Calorie-Adjusted Child Poverty (Percentage Points)</i>								
Independent vs. Extended Families	−4.01 [−15.05, 8.46]	−1.74 [−4.25, −0.58]	−0.55 [−2.76, 1.41]	1.22 [−2.23, 4.80]	0.07 [−0.11, 0.39]	0.12 [−0.78, 0.89]	−4.64 [−12.27, 5.92]	1.51 [−1.88, 3.90]
Clan-Barrios vs. Extended Families	−21.62 [−30.89, −6.80]	−2.46 [−4.75, −0.13]	1.87 [−1.07, 4.85]	−8.65 [−13.57, −2.65]	0.00 [−0.47, 0.35]	−6.66 [−11.75, 0.17]	−6.74 [−12.31, 2.57]	1.01 [−5.40, 4.72]
Easy-Harvestable vs. Other Crops	−15.00 [−24.09, −3.48]	−0.60 [−2.65, 1.25]	−0.18 [−2.49, 2.37]	−5.21 [−9.74, 0.48]	−0.01 [−0.29, 0.25]	−3.65 [−8.10, −0.05]	−8.74 [−13.58, −2.15]	3.38 [−0.59, 5.93]
Agriculture 0–25% vs. 26–75%	14.00 [−2.77, 25.51]	6.01 [1.73, 13.39]	1.39 [−1.51, 6.07]	5.23 [−2.71, 10.54]	0.00 [−0.23, 0.11]	0.00 [−1.17, 2.10]	1.88 [−9.64, 11.57]	−0.52 [−5.07, 3.71]
Agriculture 76–100% vs. 26–75%	−15.11 [−26.96, 10.43]	0.16 [−2.75, 2.63]	0.40 [−2.43, 3.16]	−6.50 [−12.38, 5.01]	0.00 [−0.65, 0.41]	−6.93 [−14.03, 0.29]	−6.22 [−11.30, 5.63]	3.98 [−2.54, 7.06]
Circumcision at 0–5 vs. Absent/Older	−10.33 [−25.21, 4.87]	3.56 [1.38, 6.08]	−1.60 [−4.77, 1.18]	−7.42 [−12.53, −3.30]	−0.03 [−0.38, 0.32]	−4.81 [−9.47, −0.11]	−1.98 [−12.19, 7.15]	1.94 [−2.38, 6.61]
Bride Price vs. Other Transactions	−0.93 [−15.05, 13.96]	−0.37 [−2.61, 1.52]	−0.27 [−1.78, 2.13]	1.15 [−3.49, 5.98]	−0.04 [−0.30, 0.23]	0.95 [−4.69, 5.07]	−2.66 [−9.86, 5.79]	0.31 [−4.67, 4.35]
Nomadic vs. Non-Nomadic	5.71 [−7.80, 32.83]	2.30 [−1.16, 6.81]	−0.02 [−3.98, 7.52]	5.78 [0.89, 9.86]	0.01 [−0.31, 0.37]	0.09 [−0.55, 2.08]	−2.62 [−10.13, 19.58]	0.17 [−4.39, 6.88]

Note: Components of the gap between the children of the two trait groups, averaged across countries. 95% intervals in brackets are percentiles over 500 replications that draw the sharing-rule coefficients and resample ethnic groups within countries.

Table E12: Decomposition of the Gaps between Trait Groups: Per-Child Share and Consumption

	Raw Gap	Own Trait	Other Traits	Household Formation	Education Gap	Rural	Household Budget	Remainder
<i>Panel A: Per-Child Resource Share (Percentage Points)</i>								
Independent vs. Extended Families	0.15 [−1.30, 1.71]	0.73 [0.20, 1.20]	0.17 [−0.49, 0.88]	−0.73 [−1.88, 0.73]	−0.02 [−0.08, 0.01]	0.02 [−0.15, 0.19]	−	−0.03 [−0.29, 0.19]
Clan-Barrios vs. Extended Families	2.03 [0.64, 3.48]	0.35 [0.02, 0.70]	−0.18 [−0.54, 0.21]	1.46 [0.47, 2.51]	0.00 [−0.04, 0.04]	0.68 [−0.04, 1.46]	−	−0.28 [−0.60, 0.07]
Easy-Harvestable vs. Other Crops	1.30 [0.09, 2.41]	0.12 [−0.25, 0.54]	0.28 [−0.16, 0.78]	0.65 [−0.54, 1.71]	0.00 [−0.04, 0.02]	0.43 [0.00, 1.03]	−	−0.18 [−0.38, 0.05]
Agriculture 0–25% vs. 26–75%	−3.59 [−5.51, −0.76]	−1.37 [−2.43, −0.38]	−0.51 [−1.53, 0.44]	−2.11 [−3.69, 0.22]	0.01 [−0.02, 0.04]	0.00 [−0.24, 0.15]	−	0.39 [−0.03, 0.69]
Agriculture 76–100% vs. 26–75%	1.18 [−1.50, 2.94]	0.01 [−0.44, 0.40]	0.11 [−0.31, 0.88]	0.56 [−2.26, 2.05]	0.00 [−0.04, 0.06]	0.71 [−0.07, 1.75]	−	−0.21 [−0.55, 0.33]
Circumcision at 0–5 vs. Absent/Older	1.44 [0.29, 2.79]	−0.74 [−1.21, −0.31]	0.17 [−0.34, 0.71]	1.73 [0.90, 2.68]	0.01 [−0.03, 0.06]	0.50 [0.01, 1.21]	−	−0.23 [−0.51, 0.05]
Bride Price vs. Other Transactions	−0.20 [−1.75, 1.11]	0.08 [−0.26, 0.51]	0.10 [−0.51, 0.56]	−0.22 [−1.55, 0.90]	0.00 [−0.05, 0.04]	−0.11 [−0.66, 0.65]	−	−0.05 [−0.31, 0.29]
Nomadic vs. Non-Nomadic	−2.50 [−5.16, −0.44]	−0.78 [−1.97, 0.33]	0.19 [−2.26, 1.41]	−2.18 [−3.21, −0.06]	−0.01 [−0.07, 0.05]	−0.03 [−0.47, 0.11]	−	0.31 [−0.03, 0.80]
<i>Panel B: Log Per-Child Consumption (Log Points)</i>								
Independent vs. Extended Families	9.45 [−14.45, 29.51]	4.73 [1.30, 8.35]	0.71 [−3.19, 5.41]	−3.14 [−9.49, 4.58]	−0.15 [−0.52, 0.10]	−0.15 [−2.46, 1.23]	7.72 [−12.14, 23.32]	−0.26 [−0.75, 0.25]
Clan-Barrios vs. Extended Families	42.02 [12.07, 59.53]	4.38 [0.38, 8.49]	−3.27 [−8.24, 2.46]	18.73 [6.91, 26.46]	0.04 [−0.63, 0.64]	11.37 [−0.57, 24.30]	12.79 [−3.74, 24.86]	−2.00 [−3.31, −0.01]
Easy-Harvestable vs. Other Crops	34.55 [13.32, 50.83]	1.22 [−2.21, 5.21]	0.98 [−3.80, 4.95]	10.94 [1.16, 19.16]	−0.01 [−0.41, 0.36]	6.73 [−0.06, 15.74]	16.15 [5.71, 27.28]	−1.46 [−2.30, −0.43]
Agriculture 0–25% vs. 26–75%	−27.72 [−49.68, 1.54]	−13.63 [−25.56, −4.36]	−3.59 [−10.58, 4.12]	−9.73 [−17.19, 3.44]	0.03 [−0.14, 0.26]	−0.05 [−3.99, 2.25]	−1.12 [−23.10, 22.92]	0.37 [−0.46, 1.35]
Agriculture 76–100% vs. 26–75%	30.23 [−17.62, 54.44]	0.07 [−4.53, 4.55]	−0.27 [−4.80, 4.87]	10.92 [−10.93, 22.59]	0.06 [−0.57, 0.67]	11.55 [−0.83, 26.87]	9.52 [−11.54, 20.44]	−1.61 [−2.81, 0.53]
Circumcision at 0–5 vs. Absent/Older	19.54 [−8.61, 51.16]	−6.44 [−10.64, −2.71]	2.54 [−2.05, 7.52]	14.67 [6.87, 22.14]	0.10 [−0.41, 0.61]	7.86 [0.22, 19.80]	1.95 [−14.93, 22.55]	−1.13 [−2.33, 0.12]
Bride Price vs. Other Transactions	2.30 [−26.81, 29.23]	0.91 [−2.96, 5.22]	0.29 [−4.03, 3.40]	−1.66 [−11.90, 8.26]	−0.01 [−0.50, 0.54]	−1.92 [−12.04, 11.12]	4.91 [−11.43, 19.02]	−0.22 [−1.14, 1.01]
Nomadic vs. Non-Nomadic	−12.03 [−58.83, 9.98]	−4.97 [−13.94, 2.83]	0.60 [−13.95, 7.62]	−11.88 [−16.65, 0.34]	−0.08 [−0.44, 0.34]	−0.55 [−6.49, 0.52]	4.52 [−37.47, 20.32]	0.33 [−0.21, 1.37]

Note: Components of the gap between the children of the two trait groups, averaged across countries. 95% intervals in brackets are percentiles over 500 replications that draw the sharing-rule coefficients and resample ethnic groups within countries.

Table E13: Decomposition of the Gaps between Trait Groups: Stunting

	Raw Gap	Own Trait	Other Traits	Household Formation	Education Gap	Rural	Household Budget	Not through Consumption
<i>Panel A: Stunting (Percentage Points)</i>								
Independent vs. Extended Families	−7.42	−0.39	−0.03	0.25	0.01	0.02	−0.61	−6.67
	[−14.73, 3.69]	[−0.69, −0.10]	[−0.38, 0.29]	[−0.36, 0.70]	[−0.01, 0.04]	[−0.14, 0.30]	[−1.82, 0.87]	[−14.21, 5.45]
Clan-Barrios vs. Extended Families	−19.69	−0.35	0.26	−1.30	0.00	−0.85	−0.95	−16.50
	[−28.21, 1.60]	[−0.67, −0.03]	[−0.18, 0.67]	[−1.95, −0.41]	[−0.06, 0.05]	[−1.80, 0.22]	[−2.00, 0.24]	[−24.90, 4.02]
Easy-Harvestable vs. Other Crops	−15.40	−0.10	−0.02	−0.84	0.00	−0.61	−1.45	−12.37
	[−23.99, −2.57]	[−0.43, 0.18]	[−0.37, 0.36]	[−1.45, −0.12]	[−0.04, 0.04]	[−1.32, 0.07]	[−2.26, −0.74]	[−20.78, 0.21]
Agriculture 0–25% vs. 26–75%	−9.64	1.14	0.30	1.01	0.00	0.05	−0.22	−11.91
	[−28.76, 13.79]	[0.34, 2.00]	[−0.30, 0.83]	[0.00, 1.80]	[−0.03, 0.01]	[−0.19, 0.54]	[−2.32, 2.50]	[−28.21, 11.42]
Agriculture 76–100% vs. 26–75%	−20.94	−0.01	0.05	−0.89	0.00	−0.86	−0.66	−18.57
	[−28.36, −2.20]	[−0.36, 0.37]	[−0.38, 0.37]	[−1.73, 0.82]	[−0.06, 0.05]	[−2.13, 0.12]	[−1.61, 1.01]	[−25.46, −2.45]
Circumcision at 0–5 vs. Absent/Older	−13.64	0.53	−0.22	−1.02	−0.01	−0.65	−0.69	−11.58
	[−28.51, 5.72]	[0.22, 0.85]	[−0.62, 0.17]	[−1.69, −0.40]	[−0.05, 0.04]	[−1.54, 0.08]	[−2.05, 0.41]	[−25.28, 6.80]
Bride Price vs. Other Transactions	1.06	−0.07	0.00	0.11	0.00	0.36	−0.05	0.71
	[−10.15, 15.68]	[−0.43, 0.24]	[−0.24, 0.36]	[−0.61, 0.96]	[−0.07, 0.06]	[−0.90, 1.40]	[−1.68, 1.13]	[−10.08, 14.61]
Nomadic vs. Non-Nomadic	−10.83	0.42	−0.12	0.73	0.01	0.03	−0.05	−11.85
	[−17.96, 20.36]	[−0.21, 1.14]	[−0.67, 1.15]	[0.00, 1.81]	[−0.03, 0.04]	[−0.08, 0.48]	[−1.06, 2.88]	[−18.06, 16.73]

Note: Components of the gap between the children of the two trait groups, averaged across countries. 95% intervals in brackets are percentiles over 500 replications that draw the sharing-rule coefficients and resample ethnic groups within countries. Stunting covers children under five with Z-scores in $[-5, 5]$; each component of the gap in log per-child consumption is multiplied by the within-country gradient of stunting in log per-child consumption. Not through Consumption is the part of the stunting gap that the components, through per-child consumption, do not account for.

E.6: Gender Channels

Tables E14 and E15 show the gender channels discussed in Section 4.5. For every characteristic, the numbers of boys and girls move together, so the differences in household formation concern children overall rather than their sex composition. The only exception is high dependence on agriculture, where the share of boys is 3.22 percentage points lower. The clearest differences by sex are in nomadic and low-agriculture groups. Girls there receive a larger share of spending on children's clothing than their share of the chil-

Table E14: Child Sex Composition and Spending on Girls and Boys

	Number of Boys	Number of Girls	Share of Boys	Girls' Clothing Gap	Girls' Education Spending Gap
Independent vs. Extended Families	0.11* (0.06)	0.10 (0.07)	0.22 (1.00)	1.27 (1.02)	-4.13** (1.86)
Clan-Barrios vs. Extended Families	-0.51*** (0.10)	-0.42*** (0.09)	-2.34 (1.54)	-0.10 (1.58)	-2.58 (1.60)
Easy-Harvestable vs. Other Crops	-0.22** (0.11)	-0.17* (0.10)	-0.66 (1.20)	-0.38 (1.14)	-1.06 (1.28)
Agriculture 0-25% vs. 26-75%	0.19 (0.16)	0.25*** (0.07)	-0.55 (1.74)	4.14** (1.67)	-3.73** (1.82)
Agriculture 76-100% vs. 26-75%	-0.34** (0.14)	-0.21 (0.14)	-3.22** (1.37)	0.05 (1.40)	-5.33*** (1.48)
Circumcision at 0-5 vs. Absent/Older	-0.37*** (0.09)	-0.30*** (0.08)	-1.67 (1.09)	-0.52 (0.97)	2.36 (2.22)
Bride Price vs. Other Transactions	0.08 (0.08)	0.10 (0.07)	-0.31 (1.17)	-0.33 (0.90)	-2.58 (2.84)
Nomadic vs. Non-Nomadic	0.27*** (0.06)	0.24*** (0.05)	-0.81 (0.84)	2.45** (1.20)	-7.21*** (2.08)

Note: Within-country differences between the category and the reference, with country fixed effects and household weights. The share of boys is among the household's children. The spending gaps are girls' share of spending on children minus their share of the children, among households with both girls and boys; clothing is recorded by sex only in Ethiopia, Malawi, and Nigeria. Shares and gaps are in percentage points. Standard errors clustered by ethnic group in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

dren (2.45 and 4.14 percentage points) but a smaller share of education spending (−7.21 and −3.73). They are also less likely than boys to be enrolled in school (−6.30 and −4.34 percentage points) but less likely to be stunted (−11.57 and −16.58). Girls’ share of education spending is also lower in independent-family (−4.13) and high-agriculture groups (−5.33). In early-circumcision groups, the enrollment gap favors girls by 2.00 percentage points. Bride price shows no gendered difference on any measure.

Table E15: Schooling and Stunting of Girls and Boys

	Enrolled: Boys	Enrolled: Girls – Boys	Stunted: Boys	Stunted: Girls – Boys
Independent vs. Extended Families	−0.64 (2.21)	−0.86 (1.65)	−7.44* (4.32)	−2.46 (3.64)
Clan-Barrios vs. Extended Families	13.02*** (3.33)	0.43 (1.35)	−19.00*** (6.40)	−3.58 (2.98)
Easy-Harvestable vs. Other Crops	10.69*** (2.29)	0.31 (1.13)	−13.39** (5.21)	−3.23 (2.96)
Agriculture 0–25% vs. 26–75%	−5.78 (4.67)	−4.34** (1.71)	−3.18 (11.60)	−16.58** (6.72)
Agriculture 76–100% vs. 26–75%	8.93** (3.62)	1.01 (1.29)	−17.57*** (6.00)	−4.92 (3.74)
Circumcision at 0–5 vs. Absent/Older	9.55*** (3.57)	2.00* (1.10)	−12.79* (7.16)	3.35 (3.26)
Bride Price vs. Other Transactions	−3.33 (2.55)	−1.08 (1.22)	−0.64 (5.75)	−2.66 (3.61)
Nomadic vs. Non-Nomadic	−9.75*** (2.67)	−6.30*** (0.79)	−4.79 (7.09)	−11.57*** (4.25)

Note: Child-level regressions on an indicator for the category, an indicator for girls, and their interaction, with age and country fixed effects and household weights. Boys is the category’s difference for boys; Girls – Boys is the additional difference for girls. Enrollment (children aged six and older) and stunting (children under five) are in percentage points. Standard errors clustered by ethnic group in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix F: Robustness

The ethnic characteristics vary only between ethnic groups and, outside Ghana, are assigned by location. They may therefore pick up differences between places rather than ancestral practices. This section reports six checks. The checks in Sections F.2–F.4 use

outcomes that do not come from the model: the number of children, stunting, and HAZ. The estimated resource shares contain the ethnic characteristics by construction, so comparing them across nearby places cannot separate the characteristic from the place.

F.1: Within-Country Comparisons

The main results compare households within countries rather than within regions, as regions enter the preference parameters but not the sharing rule. Table F1 shows why. For clan-barrios, crop type, dependence on agriculture, and male circumcision, only 22–31% of the within-country variation remains within regions, and fewer than half of households live in regions where both trait groups are present. Region fixed effects in the sharing rule would therefore remove most of the variation that identifies these characteristics. Only independent families (60%) and nomadic groups (64%) keep most of their variation within regions, and bride price keeps about half (47%). The estimates should therefore be read as comparisons of ethnic groups within a country, in which location and ancestral practices are partially entangled.

Table F1: Variation in the Ethnic Characteristics within Regions

	Share of Variation within Regions	Households in Mixed Regions (%)	Mixed Regions
Independent vs. Extended Families	0.60	68	22/53
Clan-Barrios vs. Extended Families	0.31	26	25/64
Easy-Harvestable vs. Other Crops	0.22	49	24/65
Agriculture 0–25% vs. 26–75%	0.25	35	9/59
Agriculture 76–100% vs. 26–75%	0.31	39	24/65
Circumcision at 0–5 vs. Absent/Older	0.27	49	29/65
Bride Price vs. Other Transactions	0.47	60	33/65
Nomadic vs. Non-Nomadic	0.64	41	13/65

Note: Share of Variation within Regions is the residual variance of the category indicator with region (first administrative level) fixed effects, relative to that with country fixed effects, using household weights. Mixed regions have households of both trait groups; the last column counts them out of all regions with either group.

F.2: Ethnic Border Pairs

Table F2 restricts Ethiopia, Malawi, and Nigeria to households within 25 or 50 km of another ethnic homeland, comparing close neighbors on either side of the same border.

Table F2: Ethnic Characteristics within Ethnic Border Pairs

	Number of Children	Stunted	HAZ	Border Pairs
<i>Households within 25 km of another ethnic homeland</i>				
Independent vs. Extended Families	−0.35*** (0.04)	−15.02*** (2.63)	0.34*** (0.08)	13
Clan-Barrios vs. Extended Families	−0.12 (0.12)	−1.47 (7.04)	0.07 (0.13)	10
Easy-Harvestable vs. Other Crops	−0.33*** (0.10)	−4.87 (6.62)	0.20 (0.13)	15
Agriculture 0–25% vs. 26–75%	0.66*** (0.18)	−26.22*** (4.83)	0.85*** (0.15)	7
Agriculture 76–100% vs. 26–75%	0.10 (0.15)	−9.67** (4.78)	0.03 (0.15)	16
Circumcision at 0–5 vs. Absent/Older	−0.03 (0.12)	6.38* (3.33)	−0.01 (0.14)	18
Bride Price vs. Other Transactions	0.08 (0.11)	−14.43*** (3.14)	0.19 (0.14)	25
Nomadic vs. Non-Nomadic	0.04 (0.11)	−12.02** (5.02)	0.35*** (0.13)	8
<i>Households within 50 km of another ethnic homeland</i>				
Independent vs. Extended Families	−0.01 (0.03)	−19.80*** (1.98)	0.48*** (0.07)	15
Clan-Barrios vs. Extended Families	−0.16 (0.13)	0.76 (6.57)	−0.05 (0.12)	10
Easy-Harvestable vs. Other Crops	−0.34* (0.18)	−7.59 (5.15)	0.24** (0.10)	16
Agriculture 0–25% vs. 26–75%	0.48*** (0.14)	−9.17 (6.91)	0.55*** (0.16)	8
Agriculture 76–100% vs. 26–75%	0.01 (0.13)	−6.73 (5.31)	−0.02 (0.12)	16
Circumcision at 0–5 vs. Absent/Older	−0.19** (0.07)	8.14** (3.44)	−0.18* (0.10)	20
Bride Price vs. Other Transactions	0.23*** (0.07)	−14.22*** (2.66)	0.29*** (0.08)	26
Nomadic vs. Non-Nomadic	0.22 (0.16)	−15.56*** (3.23)	0.50*** (0.11)	9

Note: Ethiopia, Malawi, and Nigeria. Regressions of each outcome on an indicator for the category, among households within the given distance of another ethnic homeland, with border-pair fixed effects, rural residence, and household weights. Border Pairs counts the pairs with both trait groups. Stunting is in percentage points; stunting and HAZ are for children under five. Standard errors clustered by ethnic group in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Because GPS coordinates are displaced by up to 2 km in urban and 5 km in rural areas, and up to 10 km for about 1% of clusters, I do not use narrower bandwidths. Most nutrition gaps remain among close neighbors. Within 25 km, children in independent-family groups are 15.0 percentage points less likely to be stunted, children in bride-price groups 14.4 points less likely, and children in nomadic groups 12.0 points less likely, while children in early-circumcision groups are 6.4 points more likely to be stunted. The gaps in the number of children are less stable. Those for crop type (−0.33) and low agricultural dependence (0.66) remain, and early-circumcision households have 0.19 fewer children within 50 km. The large clan-barrio gap in Table 5 does not remain near borders, and the gap for independent families changes sign.

F.3: Ghana within Districts

In Ghana, ethnicity is reported by the household, so households with different ethnic characteristics live in the same district. Table F3 compares them within districts. Bride-

Table F3: Ghana: Ethnic Characteristics within Districts

	Number of Children	Stunted	HAZ	Ethnic Groups
Independent vs. Extended Families	−0.12 (0.08)	−19.98 (12.50)	0.40 (0.39)	15
Clan-Barrios vs. Extended Families	0.10* (0.06)	6.43** (3.13)	0.00 (0.14)	20
Easy-Harvestable vs. Other Crops	−0.06 (0.09)	5.44 (3.90)	−0.28* (0.15)	21
Agriculture 0–25% vs. 26–75%	– (–)	– (–)	– (–)	17
Agriculture 76–100% vs. 26–75%	−0.09** (0.04)	−0.96 (5.30)	−0.10 (0.12)	21
Circumcision at 0–5 vs. Absent/Older	0.01 (0.08)	−1.30 (5.22)	0.17 (0.18)	21
Bride Price vs. Other Transactions	−0.52*** (0.14)	−11.88** (5.89)	0.38** (0.17)	21
Nomadic vs. Non-Nomadic	– (–)	– (–)	– (–)	21

Note: Regressions of each outcome on an indicator for the category, with district fixed effects, rural residence, and household weights. Outcomes as in Table F2. A dash marks a characteristic that does not vary in Ghana. Standard errors clustered by ethnic group in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

price households have 0.52 fewer children, and their children are 11.9 percentage points less likely to be stunted. Children in clan-barrio households are 6.4 points more likely to be stunted. The other characteristics show small or imprecise gaps.

F.4: Malawi: Reported and Located Ethnic Group

In Malawi, 16% of households report an ethnicity other than that of the homeland they live in. Table F4 includes the characteristics of both. The HAZ gaps follow the homeland rather than the reported group: for independent families, the gap is 0.40 for the homeland compared with -0.09 for the reported group, and for crop type, 0.27 compared with 0.06. For stunting, the pattern is less clear, as the crop-type gap follows the reported group (-9.4 percentage points). The nutrition gaps therefore stay largely with

Table F4: Malawi: Characteristics of the Reported and of the Located Ethnic Group

	Number of Children	Stunted	HAZ
Independent vs. Extended Families			
Reported ethnic group	0.12 (0.09)	3.95 (5.50)	-0.09 (0.13)
Located homeland	-0.14 (0.09)	-9.28^* (5.06)	0.40^{***} (0.13)
Easy-Harvestable vs. Other Crops			
Reported ethnic group	0.18 (0.12)	-9.41^{**} (4.57)	0.06 (0.17)
Located homeland	-0.07 (0.07)	-0.49 (3.21)	0.27^{***} (0.10)
Bride Price vs. Other Transactions			
Reported ethnic group	-0.02 (0.10)	3.61 (4.15)	-0.13 (0.15)
Located homeland	0.04 (0.10)	-6.38 (4.09)	0.28^* (0.15)

Note: Each regression includes indicators for the category of the household's reported ethnic group and of the homeland it lives in, among households where both are in the two trait groups, with rural residence and household weights. 16% of households report an ethnicity other than that of their homeland. Outcomes as in Table F2. Standard errors clustered by enumeration area in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

the place rather than travel with the people, consistent with the role of location in the decomposition.

F.5: Ethnic-Group Level

Table F5 uses one observation per ethnic group, the level at which the characteristics vary. The gaps in the per-child resource share remain for clan-barrios (1.68 percentage points), crop type (1.30), low agricultural dependence (−4.35), and nomadic groups (−3.89), but not for independent families (0.72) or early circumcision (1.00). Early-circumcision groups have 0.38 fewer children, which raises the per-child share, mirroring the household formation component in Section 4.4. Stunting is lower in independent-family, clan-barrio, easy-harvestable, and bride-price groups.

Table F5: Ethnic Characteristics across Ethnic Groups

	Per-Child Share	Child Poor	Number of Children	Stunted	Ethnic Groups (Category/ Reference)
Independent vs. Extended Families	0.72 (0.55)	−5.72 (3.90)	0.02 (0.09)	−6.38** (2.83)	29/64
Clan-Barrios vs. Extended Families	1.68*** (0.58)	−14.15* (7.28)	−0.38*** (0.14)	−8.29* (4.86)	25/64
Easy-Harvestable vs. Other Crops	1.30*** (0.38)	−20.53*** (3.96)	−0.22*** (0.08)	−5.69** (2.85)	36/82
Agriculture 0–25% vs. 26–75%	−4.35*** (0.60)	19.53*** (4.17)	0.59*** (0.14)	−7.08 (4.98)	4/100
Agriculture 76–100% vs. 26–75%	0.38 (0.82)	−8.56 (7.58)	−0.25 (0.18)	−8.75 (6.26)	14/100
Circumcision at 0–5 vs. Absent/Older	1.00 (0.65)	−5.53 (5.61)	−0.38*** (0.12)	−2.34 (4.66)	22/95
Bride Price vs. Other Transactions	−0.52 (0.67)	−11.08** (5.17)	0.07 (0.13)	−6.19* (3.25)	97/21
Nomadic vs. Non-Nomadic	−3.89*** (0.87)	14.98** (7.43)	0.59*** (0.12)	−7.36 (4.77)	8/110

Note: One observation per ethnic group in each country, with group means using household weights. Regressions of the group mean on an indicator for the category, with country fixed effects, weighted by the group's number of households. Shares, poverty, and stunting are in percentage points. Robust standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.6: Weights and Phase 1

Panel A of Table F6 shows that averaging the same estimates over households without weights, rather than over children with household weights as in Table 3, makes the per-child average marginal effects about 50% larger, with the same signs. Panel B shows that adding the ethnic characteristics barely changes the per-child resource shares. The Phase 1 and Phase 2 means differ by at most 0.007, and their correlation is at least 0.975 in every country.

Table F6: Weighting and the Phase 1 Shares

<i>Panel A: Per-Child Share AMEs (Percentage Points)</i>				
	Over Children, Weighted		Over Households, Unweighted	
	AME	SE	AME	SE
Independent vs. Extended Families	0.67	0.24	1.01	0.37
Clan-Barrios vs. Extended Families	0.41	0.19	0.62	0.29
Easy-Harvestable vs. Other Crops	0.13	0.20	0.19	0.30
Agriculture 0–25% vs. 26–75%	–1.61	0.53	–2.40	0.79
Agriculture 76–100% vs. 26–75%	0.01	0.23	0.01	0.35
Circumcision at 0–5 vs. Absent/Older	–0.72	0.19	–1.09	0.29
Bride Price vs. Other Transactions	0.09	0.23	0.13	0.34
Nomadic vs. Non-Nomadic	–0.77	0.54	–1.17	0.82
<i>Panel B: Per-Child Share, Phase 1 and Pooled Phase 2</i>				
Country	Phase 1	Phase 2	Correlation	Households
Ethiopia	0.177	0.181	0.994	4,437
Ghana	0.112	0.112	0.996	5,707
Malawi	0.202	0.202	0.998	6,826
Nigeria	0.067	0.062	0.991	2,520
Uganda	0.142	0.149	0.975	2,130

Note: Panel A reports the per-child average marginal effects of Table 3 from the same pooled Phase 2 estimates, averaged over children with household weights, as in Table 3, and over households without weights. Panel B reports, for the same households with children, the mean per-child resource share of Phase 1 (without the ethnic characteristics) and of the pooled Phase 2, and their correlation, weighted by household weights times the number of children.

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