I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 17767

Global Evidence on Gender Gaps and Child Poverty in Consumption

Ulugbek Aminjonov
Olivier Bargain
Maira Colacce

MARCH 2025

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 17767

Global Evidence on Gender Gaps and Child Poverty in Consumption

Ulugbek Aminjonov
Bordeaux University

Olivier Bargain
Bordeaux School of Economics, Princeton University, Institut Universitaire de France and IZA

Maira Colacce
BSE and IECON

MARCH 2025

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Global Evidence on Gender Gaps and Child Poverty in Consumption*

Since intra-household resource distribution is unobserved, it is difficult to compare how women and children fare across countries. To address this, we analyze 45 household expenditure surveys from predominantly low- and middle-income countries, i.e. an international sample of around 2.4 million individuals. Using harmonized estimations of intra-household resource sharing, we construct globally comparable measures of gender inequality and child poverty in consumption. Our findings reveal a widespread imbalance: women receive about one-fifth less than men, leading to a 60% higher poverty rate. Children appear to fare even worse, though this is partly explained by differences in needs and sibling economies of scale. Intra-household inequalities are more pronounced in poorer countries and among low-income households within countries. Cross-checks with nutritional proxies tend to validate our results, linking household poverty and intra-household disparities to child undernutrition. Finally, we decompose global individual consumption inequality and find that 13%-32% (across measures) stems from inequality within households.

JEL Classification: D13, I32, J13, J16

Keywords: resource sharing, intra-household inequality, child poverty, gender inequality, scale economies, nutrition

Corresponding author:
Olivier Bargain
Bordeaux University
av. L. Duguit
33608, Pessac
France
E-mail: olivier.bargain@u-bordeaux.fr

* This study has received financial support from the French State in the framework of the Investments for the Future program IdEx université de Bordeaux / GPR HOPE. We are grateful to François Bourguignon, John Cockburn, Delphine Boutin, Olivier Donni, Catherine Guirkinger, Francisco Ferreira, Nicolas Herault, Maria Lo Bue, Federico Perali, Eric Rougier, Quentin Stoeffler, Luca Tiberti and participants at various seminars and workshops (NOVA school, BSE, IECON, LACEA, Brazilian Meeting on Family and Gender Economics) for their valuable suggestions. The usual disclaimer applies.

1 Introduction

Global poverty estimates typically rely on per-capita measures of household welfare. While this approach offers key methodological advantages, such as simplicity and cross-country comparability (Ferreira et al., 2016), it overlooks critical factors that influence individual experiences of poverty (Lanjouw and Ravallion, 1995). *First*, the per-capita approach fails to capture within-household inequality, a significant limitation given growing evidence that such disparities constitute a substantial share of overall inequality.[1] Neglecting these intra-household disparities may severely distort assessments of countries' relative progress in addressing child and gender-specific poverty. *Second*, the per-capita approach disregards differences in needs among household members,[2] and often ignores the presence of economies of scale in multi-person households, despite evidence that the benefits of joint consumption significantly influence global poverty patterns (Jolliffe and Baah, 2024; Batana et al., 2013).

This paper proposes to address these issues more systematically than the existing literature. Specifically, we address the first concern by estimating state-of-the art models of intra-household resource distribution for many countries to assess individual resource shares and poverty rates for children, women and men. The second set of concerns is tackled through extensive sensitivity analyses, exploring a range of assumptions regarding child needs and economies of scale. Our application relies on expenditure surveys for 45 countries, mainly low- and middle-income countries in Africa, Asia and Latin America, along with a few middle-income European countries and higher-income Latin American countries. In doing so, we provide the first global characterization of gender inequality and child poverty patterns in consumption.

As a by-product of this extensive data work, we offer a unique assessment of the feasibility of empirical methods for estimating resource allocation (such as Browning et al., 2013 and Dunbar et al., 2013). This effort results in a mapping of countries where expenditure data and basic demographic information can be reliably leveraged to estimate intra-household consumption inequality, as well as an identification of challenges faced by other countries (e.g., missing surveys, lack of expenditure data on key identifying

[1] Early evidence relied on nutritional data, which enables comparisons of household members' caloric intake relative to their age- and gender-specific requirements. Intra-household nutritional inequality has been documented in Haddad and Kanbur (1990a,b), Haddad and Hoddinott (1994), Hoddinott and Skoufias (2004), Cockburn et al. (2009) and D'Souza and Tandon (2019) for specific countries; Brown et al. (2019) for a large set of countries.

[2] Several factors contribute to this limitation, including the lack of reliable data on family composition in some countries (both in surveys and administrative records for social programs), the instability of relative child need estimates, and the tendency of these estimates to focus primarily on nutrients (Lanjouw and Ravallion, 1995; Deaton, 1997; Blundell and Lewbel, 1991; Ravallion, 2015).

goods, etc.). A critical requirement to carry out this type of analysis is that surveys include not only total household expenditure but also spending on "exclusive" goods, i.e. items consumed solely by men, women, or children, or "assignable" goods, i.e. whose consumption can be distinguished by demographic groups. To meet this criterion, we use clothing as an assignable good, given that most consumption datasets record clothing expenditures separately for adult men, adult women, and children. With these data and simple restrictions on individual preferences, resource-sharing functions can be estimated for nuclear households (Bargain and Donni, 2012; Dunbar et al., 2013) as well as for more complex family structures (Penglase, 2021; Bargain et al., 2022; Calvi et al., 2023). Under these conditions, we estimate individual resource shares—and, consequently, the specific poverty levels of men, women, and children—in 45 countries where the approach is applicable, out of an initial sample of 81 countries. This global sample comprises 2.44 million individual observations.[3]

Thanks to data harmonization and the use of a common approach across all countries, our central result—a global mapping of gender inequality and child poverty—is consistent and comparable across contexts. The key findings are as follows. First, we observe a frequent imbalance among adults, with women receiving a significantly smaller share of household resources than men in 23 countries and, on average, about 20% less. As a result, women face higher poverty rates than men, with an international average of 29.5% for women compared to 18.5% for men at the \$3.2/day poverty line (12.4% versus 6.8% at the \$1.9/day line). Children are even poorer: at the \$3.2/day threshold, their average poverty rate is roughly two and a half times that of women when needs are not adjusted for. Women and children's poverty rates converge under the assumption of extremely low child needs relative to adults or, more plausibly, when assuming reasonable differences in needs and a substantial degree of economies of scale in consumption among siblings (such as the reuse of clothing). Furthermore, child resources are lowest in poorer countries, or in poor households within countries, which is consistent with higher fertility rates and an unfavorable child quality-quantity trade-off in these settings. Expressed in terms of individual poverty, this pattern implies that child poverty declines more slowly than adult poverty as living standards rise, leading to the largest child-adult poverty gaps in countries at intermediate levels of development in our sample. Finally, we conduct cross-validation checks between consumption and nutrition. Precisely, we

[3]The World Bank's Global Income Distribution Dynamics (GIDD) dataset also compiles household-level survey data for 121 countries and has been used to estimate global poverty rates for children and adults (Batana et al., 2013). However, we cannot assess the feasibility of resource share estimations with this dataset due to restricted access. More importantly, to our knowledge, the dataset does not record consumption data for exclusive/assignable goods, which are necessary to apply the proposed methods.

show a positive correlation between child poverty in consumption and child undernutrition across different living standards, both using cross-country variation or, for a subset of countries, variation across households. Our findings highlight that child undernutrition is not solely driven by low household consumption levels but is also exacerbated by intra-household inequality, which deepens child deprivation. Finally, we decompose global inequality in individual consumption (using decomposable inequality indices). Approximately one-third of global inequality stems from differences between countries, 38-56% (across measures and assumptions) from differences between households, and 13-32% from intra-household inequality. This highlights the potential mismeasurement of inequality that arises from overlooking unequal sharing *within* families.

This paper makes several contributions. *First*, while some evidence suggests that women often receive less than an equal share of household resources (World Bank, 2018) and that children may not get sufficient resources, there has been no systematic investigation of intra-household consumption inequalities across multiple countries.[4] As noted, international comparisons of gender inequality and child poverty typically rely on broad household-level indicators using the per-capita approach. Our study represents, to our knowledge, an original attempt to extensively estimate gender gaps in consumption and child-specific poverty on a large scale. We acknowledge the fact that several studies also examine women's and children's welfare within households, but on the basis of specific individual-level measures such as nutrition, health indicators or education levels/expenses (e.g., Kennedy et al. 2020, Klasen and Lamanna 2009, Alkire and Foster 2011 for gender gaps; Bredenkamp et al., 2014 and Alkire et al., 2019 for child poverty; Brown et al., 2019 for both women's and children's deprivation). While these dimensions are essential, they differ from the monetary measure of individual consumption and poverty estimated in this study, making our approach complementary to existing international comparisons. *Second*, this paper provides a data-intensive contribution by assessing how often a collective consumption model identified through assignable goods can be applied across publicly available expenditure surveys from low- and middle-income countries. We also take part in recent validation efforts for these tools (such as the comparison between estimated and actual resource shares in rare cases where consumption data is fully individualized, cf. Bargain et al., 2022). We rely here on nutrition proxies, specifically child wasting and stunting. Since undernutrition is partly driven by limited access to resources, leading to insufficient caloric and protein intake (Steckel, 1995), we propose a cross-validation between nutrition and consumption measures. We find that undernutri-

[4] An exception is Bose-Duker et al. (2021), which estimates resource shares for six countries.

tion aligns with low per-person consumption levels, both at the macro and micro levels. *Third*, by covering a wide range of economies at different stages of development, our study allows us to explore the relationship between intra-household inequality and individual poverty across countries. In this way, we contribute to the debate initiated by Jayachandran (2015) on whether intra-household inequality declines as countries develop or whether cultural norms in many low-income countries exacerbate male favoritism. In particular, we suggest that child-adult poverty gaps may reflect decreasing per-child resource shares as family size increases. The per-capita approach also suggests significantly higher child poverty rates than adult poverty rates (World Bank and Unicef, 2020) because children disproportionately live in poor households (Chen and Ravallion, 2010). In this more traditional setting, accounting for differences also (partly) reduces the mechanical child-adult poverty gap (Batana et al., 2013). Our framework is different, however, and puts some structure on the way the positive correlation between fertility and household poverty translates into large child poverty rates.

The rest of the paper is structured as follows. Section 2 describes the empirical strategy and the data used in the estimation of intra-household resource allocation. Section 3 presents our main results on resource shares and individual poverty, providing a cross-validation of estimated resource shares and nutrition measures for children. The concluding section discusses key measurement and policy implications of these results.

2 Empirical Strategy

2.1 Identification of Individual Resource Shares

Our approach belongs to the broad family of collective household models. These models, unlike the unitary approach, account for the bargaining process underlying household decisions (Bourguignon and Chiappori, 1992) and, ultimately, allow recovering the intra-household allocation of resources (Browning et al., 2013). Initially, this approach assumed that households make efficient decisions (Chiappori, 1988), which rationalizes the decentralization of the household decision process leading to a sharing rule interpretation.[5] While efficiency is questionable, especially in the context of poor countries (Baland et al., 2020), it turns out not to be necessary to justify our approach. Efficiency is just a commonly accepted way to support a sharing rule interpretation but probably not the only one (Lewbel and Pendakur, 2022). Thus, we simply assume the existence

[5]This is a direct application of the Second Welfare Theorem (Chiappori, 1992). That is, household decisions are as if total resources were first shared among household members and then each individual decides about her consumption bundle based on her resources and preferences.

of a rule governing the distribution of resources within the household and follow recent studies (Browning et al., 2013; Bargain and Donni, 2012; Dunbar et al., 2013; Bargain et al., 2023), which propose a tractable and transparent framework for identifying it based on household-level consumption data, assignable goods, and preference restrictions.

Sharing Rule and Notations. Let us introduce some notations. Denote x the log of total private expenditure and $\eta_{i,s}(z^r)$ the share of total private expenditure $\exp(x)$ accruing to each group of individuals $i = m, f, c$, i.e. men, women, and children, in a household of composition s. Household composition corresponds to the number s_i of persons of each type i, stacked in the vector $s = (s_m, s_f, s_c)$. Resource shares depend on several factors, denoted by the vector z^r, including household demographic characteristics. Each person of type i in a family of composition s is assumed to consume (log) private resources $x_{i,s} = x + \ln \eta_{i,s} - \ln s_i$, which we later use to calculate individual poverty. From this expression, we explicit state that all individuals of the same type receive the same resource share. That is, we can only identify the total resource share for each person type $i = m, f, c$ (men, women, children) but not the shares of specific individuals within a given type (e.g., girls within the category of children). This is solely a data limitation and not really an impediment for our exercise, as we focus mainly on gender and adult-child poverty gaps.[6] Moreover, by including the proportion of boys (among all children) in z^r, we can capture whether the resource shares for children are biased in favor of boys, i.e. a gender gap among children (see Deaton, 1997; Dunbar et al., 2013; Bargain et al., 2018).

Structural Engel Curves at Individual and Household Levels. We opt for a semi-parametric identification as in Dunbar et al. (2013). Assuming Piglog indirect utility functions for each individual (Deaton and Muellbauer 1980), we obtain *individual* Engel curves that are linear in the logarithm of individual resources (there is no price variation in our static framework). That is, the individual budget share for a good k consumed by each individual of type i in a household of type s is written:

$$w_{i,s}^k = \alpha_{i,s}(z^p) + \beta_{i,s}(z^p) \cdot x_{i,s}(z^r), \tag{1}$$

with preference shifters z^p and sharing rule determinants z^r. The key data requirement for the identification of resource shares is the presence of exclusive goods, i.e. goods consumed only by one specific demographic group (e.g., tobacco for adults, toys for children), or assignable goods, the consumption of which can be distinguished be-

[6] More refined analyses could estimate resource sharing between boys and girls, or between older and younger adult women, for instance. Yet, this would require observing expenditures on goods exclusively consumed by these specific sub-groups.

tween men, women and children (e.g., clothing). We index these exclusive/assignable goods k_m, k_f, k_c for men, women, and children, respectively. For instance, if k_f corresponds to women´s clothing, $w_{f,s}^{k_f}$ denotes the proportion of her own resources $\exp(x_{f,s})$ that each woman allocated to clothing. From the structure placed on individual demand in equation (1), we can derive *household* Engel curves. If we multiply $w_{f,s}^{k_f}$ by $\eta_{f,s} = s_f.\exp(x_{f,s})/\exp(x_s)$, we obtain the level of spending on women's clothing as a fraction of total expenditure, i.e., the *family budget share* on that good, denoted $W_s^{k_f}$. Thus, we can write a system of household budget shares for assignable (or exclusive) goods k_i, $i = m, f, c$:

$$\begin{aligned} W_s^{k_m} &= \eta_{m,s}(z^r) \cdot (\alpha_{m,s}(z^p) + \beta_{m,s}(z^p) \cdot (x + \ln \eta_{m,s}(z^r) - \ln s_m)) \\ W_s^{k_f} &= \eta_{f,s}(z^r) \cdot (\alpha_{f,s}(z^p) + \beta_{f,s}(z^p) \cdot (x + \ln \eta_{f,s}(z^r) - \ln s_f)) \\ W_s^{k_c} &= \eta_{c,s}(z^r) \cdot (\alpha_{c,s}(z^p) + \beta_{c,s}(z^p) \cdot (x + \ln \eta_{c,s}(z^r) - \ln s_c)) \end{aligned} \tag{2}$$

where the left-hand terms are observed. The next step is therefore to estimate this demand system on log expenditure x and household characteristics z^p, z^r and s to retrieve the resource share function.

Restrictions and Identification. To do so, preference restrictions must be introduced. First, notice that men's resource share can be written as the residual to one of the women's and children's shares, i.e. $\eta_{m,s} = 1 - \eta_{f,s} - \eta_{c,s}$. Then, the derivatives of the demand system with respect to log expenditure yield:

$$\begin{aligned} \partial W_s^{k_f}/\partial x &= \eta_{f,s}(z^r) \cdot \beta_{f,s}(z^p) \\ \partial W_s^{k_c}/\partial x &= \eta_{c,s}(z^r) \cdot \beta_{c,s}(z^p) \\ \partial W_s^{k_m}/\partial x &= (1 - \eta_{f,s}(z^r) - \eta_{c,s}(z^r)) \cdot \beta_{m,s}(z^p) \end{aligned} \tag{3}$$

for each s out of a total of S different household types. The left-hand derivatives are observed when household Engel curves are not flat, which is an applicability condition that we shall check in the empirical analysis. The system above have $3S$ equations and $5S$ unknowns ($\eta_{f,s}, \eta_{c,s}$, $\beta_{m,s}$, $\beta_{f,s}$ and $\beta_{c,s}$ for each s). As restriction on the preferences, we rely on the Similarity Across People (SAP) assumption suggested by Dunbar et al. (2013). It states that assignable (or exclusive) goods, the shape of individual Engel curves is similar across person types $i = m, f, c$ of a given household type s. Formally, it is written as: $\beta_{m,s} = \beta_{f,s} = \beta_{c,s} = \beta_s$ for each s. With this restriction, there are $3S$ unknowns in total ($\eta_{f,s}$, $\eta_{c,s}$ and β_s for each s) and, hence, an exact identification. Note that SAP is a commonly used restriction in the demand literature and a weaker version of the shape-

invariance defined by Lewbel (2010). This is a relatively strong assumption but it has been tested and validated in recent studies.[7]

Specification and Estimation Method. The semi-parametric approach provides the log-linear specification of Engel curves derived from Piglog preferences, as written in equation (1). We model resource shares using logistic functions to guarantee that the shares are in range $(0, 1)$ and sum up to 1. To estimate the model, we add error terms to household Engel curves for men's, women's, and children's assignable goods in the demand system (2) and impose the SAP condition. That is, we estimate the system:

$$\begin{aligned} W_s^{k_m} &= \eta_{m,s}(z^r) \cdot (\alpha_{m,s}(z^p) + \beta_s(z^p)(x + \ln \eta_{m,s}(z^r) - \ln s_m)) + \epsilon_{m,s} \\ W_s^{k_f} &= \eta_{f,s}(z^r) \cdot (\alpha_{f,s}(z^p) + \beta_s(z^p)(x + \ln \eta_{f,s}(z^r) - \ln s_f)) + \epsilon_{f,s} \\ W_s^{k_c} &= \eta_{c,s}(z^r) \cdot (\alpha_{c,s}(z^p) + \beta_s(z^p)(x + \ln \eta_{c,s}(z^r) - \ln s_c)) + \epsilon_{c,s} \end{aligned} \tag{4}$$

with

$$\begin{aligned} \eta_{f,s} &= \exp(\gamma_f z^r)/D,\ \eta_{c,s} = \exp(\gamma_c z^r)/D,\ \eta_{m,s} = 1/D \\ \text{and } D &= 1 + \exp(\gamma_f z^r) + \exp(\gamma_c z^r). \end{aligned}$$

Since the error terms of the model are likely to be correlated across equations, each system is estimated using Non-Linear Seemingly Unrelated Regressions. Details about the estimation procedure are explained in Appendix 1. To maximize the number of countries included in our analysis and ensure comparability, we have adopted a parsimonious model specification. Engel curve parameters $\alpha(z^p)$ and $\beta(z^p)$ vary with preference shifters z^p that include household composition (namely s_m, s_f, s_c) and an urban dummy. For the sharing rule, we specify a logistic form with a set of variables, z^r, equivalent to z^p (household composition and urban) plus other demographic characteristics, namely the average age of each person type and the proportion of boys among children. This specification is systematically applied across all countries in our database, with only a few exceptions: specifically, for Argentina, Chile and Panama, the urban dummy is not included as the surveys are implemented only in urban areas.

[7] Using direct observations of resource shares in microdata for Bangladesh, Bargain et al. (2022) tends not to reject SAP for clothing. Other tests rely on indirect methods, starting from alternative identification approaches that do not require SAP and then testing it as a restriction. Notably, Dunbar et al. (2021) and Brown et al. (2021) use distribution factors for identification and provide relative support for SAP based on data from Malawi and Bangladesh, respectively.

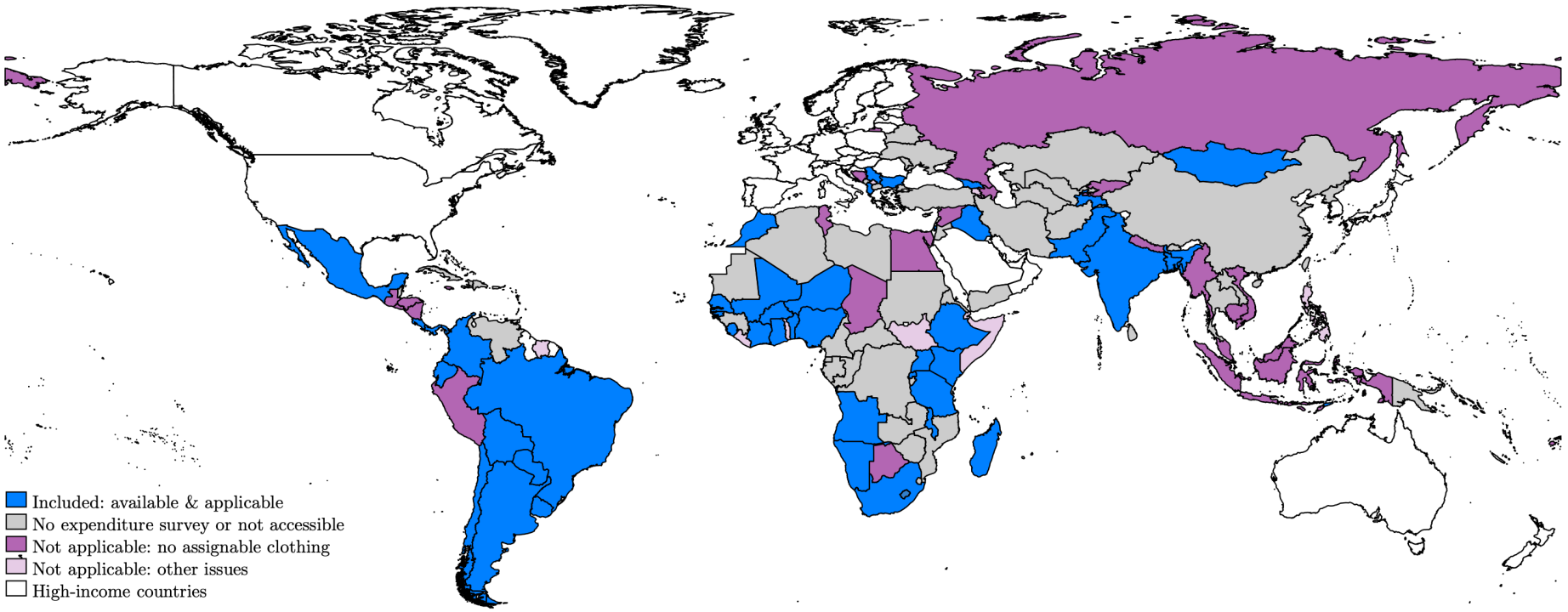
2.2 Household Expenditure Data and Key Variables

Country and Data Selection. As mentioned in the introduction, the selection of countries in our sample is based solely on the availability of household expenditure surveys that enable the estimation of the model described above. We identified expenditure surveys for 126 non-Western (i.e. low- and middle-income countries along with a few higher-income Latin American countries), of which 81 have accessible microdata and sufficient data documentation. A key requirement for identifying individual resource shares is the availability of expenditure data on goods assignable to men, women, and children—specifically, the assignability of clothing expenditures, as further discussed below. Additionally, we require a parsimonious set of demographic variables, including household composition, the age of household members, and urban/rural location. For each country, we select the most recent survey that meets these criteria and is publicly available (or was, at the data preparation stage of our project). It turns out that 26 countries lack assignable clothing expenditure data, and another 10 have missing information that prevents estimation of the collective model (e.g., total expenditure could not be recovered or key demographic variables are missing). This leaves us with a final sample of 45 countries (36% of the initial set), predominantly low- and middle-income countries. Datasets are described in Appendix 2. Excluded surveys, along with the reasons for exclusion, are listed in Table A1. Selected countries, along with the corresponding survey years, dataset names, and recall period for clothing, are listed in Table A2.

Figure 1 illustrates both the geographical coverage of our analysis and the overall feasibility of resource share estimations. Our data assessment and country selection provide valuable insights into the global feasibility of estimating individual resource shares using collective models, exclusive/assignable goods, and publicly available expenditure data for low- and middle-income countries. As noted, out of the 126 identified expenditure surveys, 36% were not accessible, 21% lacked assignable clothing expenditure data, 8% were unusable due to critical missing information, and 36% are ultimately used.[8] The countries included in our analysis represent 42% of the global population. Latin America has the highest representation, with 11 countries covering 78% of the region's total population. Africa follows, with 22 countries representing 60% of the African population. Additionally, we include 8 Asian countries and 4 middle-income European countries.

[8]Many surveys used in this study originate from the Living Standards Measurement Study (LSMS) program, while several others were collected at the national level but follow methodologies similar to LSMS. Some countries with non-accessible surveys may potentially meet the model's requirements. However, even where questionnaires indicate the presence of expenditure data on assignable clothing, data quality could not be verified.

Figure 1: Country Selection and Survey Availability



Notes: The figure maps the availability of expenditure surveys that comply with the collective model estimation requirements. "*No expenditure survey or not accessible*" category includes countries with (i) no expenditure surveys (11 surveys, 20% of the category), (ii) no access to the expenditure survey data but only to its documentation showing that expenditure data on assignable clothing is possibly collected (35 surveys, 62% of the category), but we cannot completely assess the applicability without checking the data, and (iii) no access to the expenditure survey data and nor its documentation (10 surveys, 18% of the category), so we cannot assess the applicability. Table A1 reports the details of excluded surveys and their exclusion reason. Table A2 provides detailed information about the included surveys.

Survey years range from 2002 to 2019, with 29 surveys (64%) conducted after 2014. We focus on expenditure surveys conducted before the COVID-19 pandemic to avoid potential distortions in the data.

Expenditure Data. All the surveys used in our analysis include the necessary information on household consumption, assignable clothing expenditures, and demographic characteristics, as outlined above. The choice of clothing for resource share identification is primarily pragmatic, given the scarcity of exclusive/assignable goods in standard surveys or their limited suitability for this purpose.[9] Assignable clothing expenditures are widely available in standard expenditure surveys, appearing in 71% of the initial 126 countries and 68% of accessible surveys. Furthermore, unlike other goods, clothing is less susceptible to large consumption externalities,[10] and the use of clothing expenditure for resource share identification is also supported by recent validation tests (Bargain et al., 2022).

Sample Selection. For each country, we aim to conduct an individual poverty analysis on the most representative sample possible. Therefore, we impose minimal exclusion criteria, discarding only households with missing essential information, such as expenditure and demographic data required for the model. To reduce measurement errors, we also exclude a small number of observations identified as outliers in terms of total household expenditure and budget shares allocated to clothing. Following recent contributions (Calvi, 2020; Bargain et al., 2022; Brown et al., 2021), and given our focus on the intra-household distribution of resources among men, women, and children, we include all household types that contain at least one individual from these groups. As a result, our samples encompass both nuclear families and more complex households with multiple adults of the same gender, a common structure in poorer countries. The final sample size for each country is presented in Table A2, covering globally almost 591 thousand households and 2.4 million individuals.

Summary Statistics. Table A3 presents the mean and standard deviation of the demographic variables used in the estimation of the structural model, considering all households that include men, women, and children. The number of children per household varies significantly across countries, reflecting differences in demographic transition stages.

[9] A few types of exclusive goods have been suggested in the literature, most commonly adult goods used in the Rothbarth approach to estimate the cost of children (Deaton, 1989). However, adult goods such as alcohol and tobacco present challenges due to misreporting (Deaton, 1997) and typically do not allow for a distinction between men and women. In contrast, children's, men's, and women's clothing expenditures are often reported separately, making them suitable as assignable goods.

[10] For these reasons, this good has been extensively used to retrieve child resources with the Rothbarth approach (Deaton, 1997), to test efficiency in early collective models of consumption (e.g., Bourguignon et al., 2009) or to identify resource sharing in households with children (as cited before).

For instance, in Latin American and European countries, as well as in India, Mongolia, and South Africa, households have an average of two children or fewer. In contrast, households in other countries generally have three or more children on average. As we will see, this variation in fertility is likely to be an important determinant of cross-country differences in resource allocation to children. The average number of men and women in households reflects the inclusion of non-nuclear families in our analysis. As expected, poorer countries—mainly in Africa—tend to be more rural. Table A4 provides statistics on household expenditure. Annual total household expenditure varies widely, ranging from approximately 2,700 dollars (2011 PPP) in Madagascar to nearly 31,500 dollars in Chile, illustrating the broad spectrum of living standards in our sample. This variation enables us to examine the relationship between intra-household inequality and individual poverty across different stages of economic development. In nearly all countries, households allocate around 1%–5% of their budget to clothing expenditures for each person type. The infrequency of clothing purchases does not pose a methodological concern (see Dunbar et al. 2013), as the proportion of households reporting zero clothing consumption remains within reasonable bounds across all countries. Differences across countries may partly reflect survey data collection methods—notably, zero clothing expenditures tend to be more frequent when the recall period for clothing expenditures is short, as indicated in Table A2. Additionally, we ensure that our poverty estimates align with official poverty statistics.[11]

3 Results

3.1 Patterns of Intra-Household Inequality

Overall Intra-Household Inequality. Estimates of the resource sharing functions for each country are presented in Tables A5 and A6, with a detailed discussion of the marginal effects of socio-demographic factors in Appendix 3. The results are in line with, and generalize, findings from related studies (see the review of Table A8, discussed later). The estimations of country-specific resource sharing functions allow us to predict individual

[11] Figure A1 compares our poverty estimates to World Bank-reported poverty rates for the poverty line corresponding to each country's income level. Graph (a) plots our full-sample estimates (vertical axis) against official poverty rates (horizontal axis), showing strong alignment, even in cases where official estimates are based on a different survey or welfare measure (income vs. consumption). Graph (b) compares World Bank poverty rates with our estimates for the restricted sample of households containing men, women, and children. As expected (World Bank, 2018; Munoz Boudet et al., 2018), this sample restriction results in higher household poverty rates compared to official figures for the total population. The effect is particularly pronounced in Latin America, where single individuals and childless couples tend to be wealthier. However, some exceptions exist (e.g., Malawi, Senegal, Gabon), where single individuals are especially poor, leading our poverty estimates—excluding singles—to be lower than the official figures.

resource shares. We also report average shares, calculated at sample means, and their standard errors in Table A7. In column (1) we provide a pre-test for the method's applicability by verifying that the estimated slope β of the clothing Engel curves is statistically different from zero for a large majority of households in each country.[12] Columns (2)-(4) report per-person resource shares at the sample means for men, women, and children, respectively. We observe a consistent pattern of intra-household inequality in resource allocation, where men receive larger shares of resources than women, while children's shares are considerably lower than those of adults'. On average, each man consumes between 20%-46% of household resources (with a global mean of 30.6%), women receive between 17%-33% (a global mean of 24.6%), and children between 3%-23% (a global mean of 8.3%). The lower resource shares allocated to children partly reflect differences in needs and scale economies, as discussed hereafter, and cannot directly be interpreted as inequality.

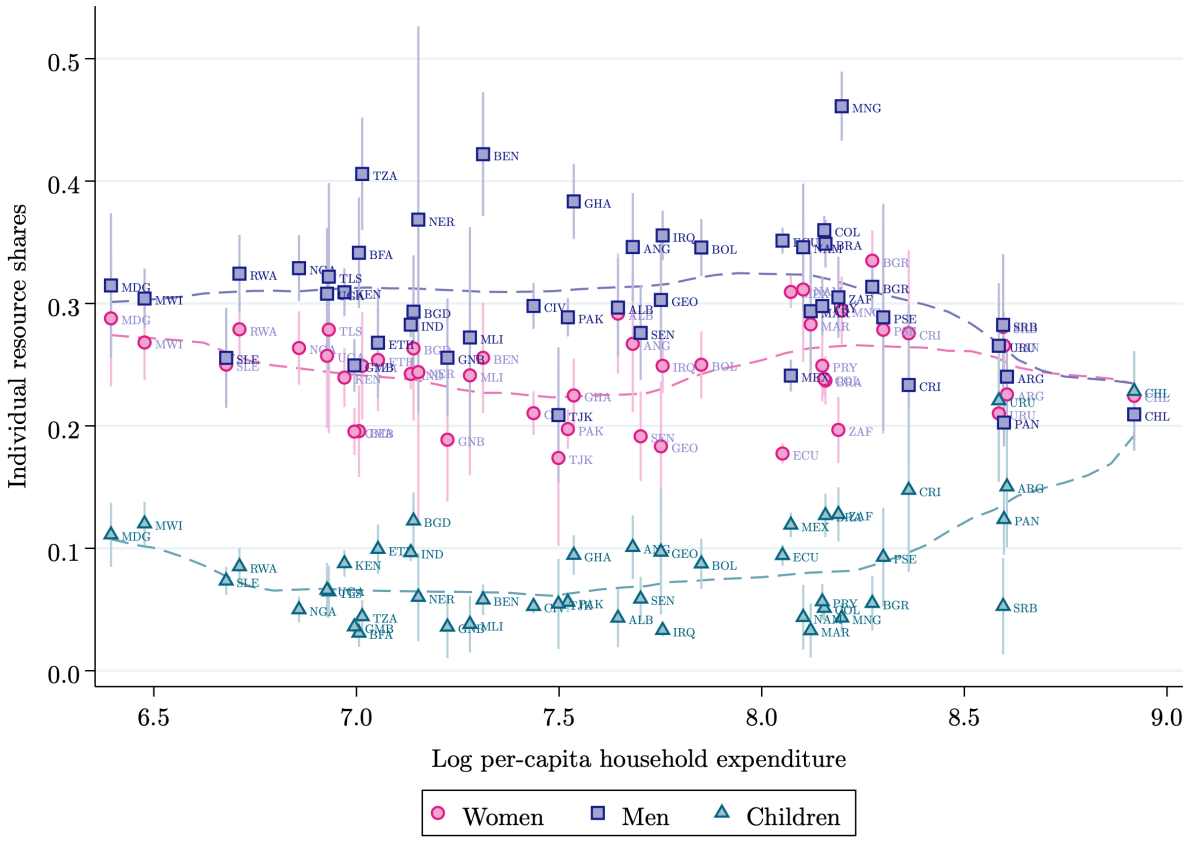
Gender Consumption Gap. Focusing on gender disparities among adults, men receive a larger share of household resources than women in most countries, with a statistically significant gender gap in 23 countries. There are a few exceptions where the gender gap is reversed, most notably in Mexico and Panama, where the difference is statistically significant, and in some other cases, such as Bulgaria, where the gap is statistically insignificant. Globally, the average gender gap in resource allocation is approximately 6 percentage points, as detailed in column (5) of Table A7, meaning that women receive, on average, 18.8% less than men. This global assessment of the gender gap in consumption, based on resource-sharing estimates, represents the first large-scale analysis of its kind. For the few overlapping countries, it broadly aligns with existing evidence, as summarized in the review of Table A8. However, this comparison remains indicative, as several studies are not directly comparable due to their exclusive focus on nuclear households. Despite these differences, we converge with past studies on salient features such as the frequent gender gap but also the presence of some exceptions such as Mexico and Bulgaria.[13] Findings related to children's resource shares are discussed later in the context of individual poverty, but it is worth emphasizing that our results are also broadly consistent with previous estimates in Table A8.[14]

[12] Recall that zero slopes, i.e., flat Engel curves, would prevent the identification of resource shares (Dunbar et al., 2013).

[13] For Mexico, past analyses point to a relatively large per-woman share, ranging from 0.29 to 0.38 across studies for nuclear households and 0.34 for complex households in Calvi et al. (2023). Our estimate is similar in magnitude (0.31) and also favors women. In Bulgaria, a reversed gender gap is observed in Bose-Duker et al. (2021) as well as in the present study, though it is not statistically significant.

[14] In particular, we confirm key patterns observed in past studies, such as the exceptionally low level of child resources in Iraq (cf. Bose-Duker et al. 2021).

Figure 2: Individual Resource Shares by Living Standards
(Baseline Calculated at Sample Means)



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates per-man, per-woman, and per-child resource shares predicted using *country-level mean household characteristics* by log per-capita household expenditure. Mean household characteristics and log per-capita household expenditure are based on the sample of households with men, women and children. Per-person shares do not add up to one due to the different number of members of each demographic group within households. Spike lines represent 95% confidence intervals. Smooth lines are based on locally weighted regressions of resource shares on log household expenditure.

Intra-Household Inequality by Living Standards. A second set of conclusions pertain to the fact that there is much variation in estimated resource shares across countries. This dispersion might be driven by development levels or their correlates, such as gender roles, cultural norms, and democratic institutions. To illustrate the extent of intra-household consumption inequality by living standards, Figure 2 presents country-level resource shares—estimated at the sample mean for each country—plotted against (log) mean per-capita household expenditure. Overall, our findings suggest that intra-household inequality declines with higher living standards. While gender disparities in resource allocation persist, they tend to diminish as countries develop. The adult-child gap is pronounced at every development levels but disappears at the top, which corresponds to Argentina, Uruguay, Panama and Chile in our international sample. Figure 2 is based on country-level resource shares predicted at the sample means of household char-

acteristics for each country. Alternatively, Figure A3 presents resource shares computed as the average prediction over all households in each country, hence incorporating the full variation in household covariates. While these two approaches might yield different results due to the non-linearity of resource share functions, they reassuringly produce very similar patterns.

Fertility, Per-child Shares and Child Deprivation. Critically, in large families, per-child resource shares are mechanically smaller than in smaller families.[15] This is evident in the estimates of the resource-sharing function, where child shares decline as the number of children increases, which is illustrated in Figure A4 (see also Bargain et al., 2015; Dunbar et al., 2013; Calvi, 2020; Bargain et al., 2022, among others). Thus, larger adult-child divide in resource shares among poor countries, as previously observed, may be linked to fertility differences. We indeed confirm that family size is larger among poorer countries in our international sample, as documented in Figure A5 (see also Doepke et al., 2022; Guo et al., 2022). A natural interpretation pertains to the child quality-quantity trade-off (Becker, 1960), where child investments are reflected in consumption allocation. Cultural factors may also play a role—for instance, when fertility preferences are shaped by family norms and redistributive biases—but these factors are not necessary to explain our pattern of intra-household inequality.[16] Another interpretation is that parents do not deliberately choose to allocate fewer resources per child because they (or social norms) favor having many children; rather, scale economies among children may play a significant role in these contexts (a point extensively studied in sensitivity analyses hereafter). Normatively, however, the distinction is subtle, especially if reused goods are perceived as lower-quality substitutes for younger siblings. Finally, we emphasize the fact that a positive correlation between fertility and poverty must exacerbate child deprivation in poorer countries, as lower household resources compound with lower per-child shares. This dynamic may not be immediately visible in section 3.2, as we focus on individual poverty. Indeed, in the poorest set-ups, both adults and children are poor, so adult-child poverty gaps are not visible. However, this will become relevant when examining child deprivation, particularly when cross-validating with nutrition measures.

Sensitivity of Model Specification. We have experimented several alternative models to conduct robustness checks. In particular, our baseline specification relies on the 'independent of the base' (IB) assumption, which is necessary for identification–it assumes

[15] For very large households, this must be the case even if parents (or mothers) make significant sacrifices to maintain a consistent allocation per child.

[16] For instance, Figure A5 illustrates that Muslim-majority countries are above the trend line in terms of family size (see also Heaton, 2011), but this deviation is visible at every development stages and, hence, primarily accounts for vertical dispersion.

that individual resource shares are independent of total household expenditure.[17] This restriction might pose limitations when analyzing within-country variation in section 3.3, as cross-household differences in intra-household inequality are then solely driven by variation in household composition and socio-demographic characteristics. To enhance the specification and allow resource-sharing functions to vary with living standards within a country, we relax IB by introducing an indicator for whether household expenditure is above or below the country-level median. The conditions for identification, including IB, are respected within each half of the population. With this model, the coefficient for the above-median expenditure indicator is generally small and not always significant.[18] Importantly, we have verified that all key findings presented so far, as well as subsequent results, are preserved with this model.

3.2 Implication for Individual Poverty

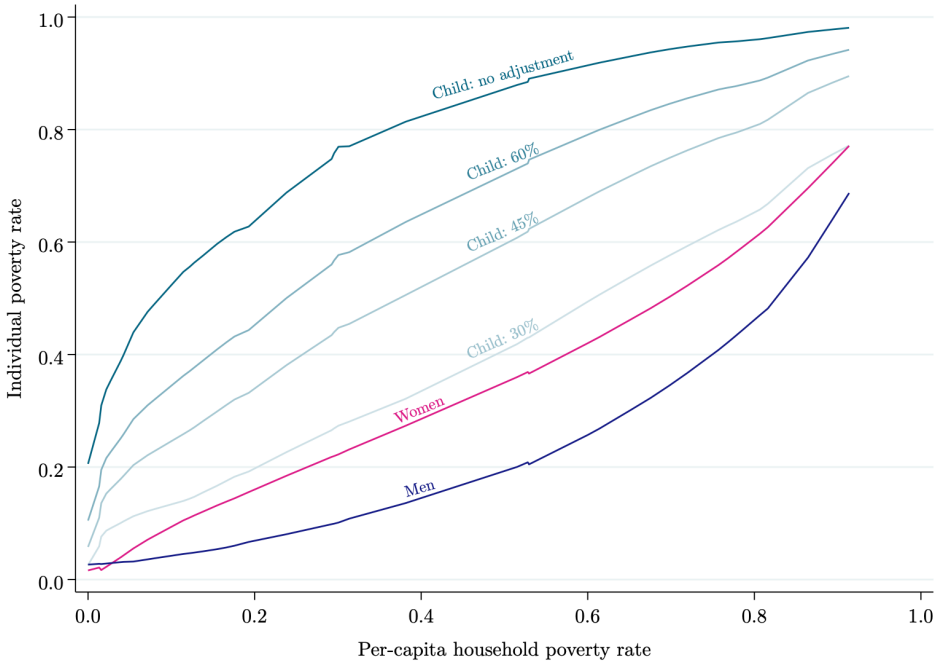
From Intra-Household Inequality to Individual Poverty. After estimating individual resource shares, we can compute individual consumption *levels* for children, women, and men, and subsequently determine their respective poverty rates. We first focus on the international poverty line of $3.2 per person per day (2011 PPP)—an intermediate threshold well-suited for capturing poverty across countries with diverse income levels. In Figure 3, we plot smoothed lines based on locally weighted regressions of country-level individual poverty rates for men, women, and children against household per-capita poverty. For visual clarity, we simply present nonlinear trend lines (Appendix Figure A6 replicates these results and shows country-level scatter points). As discussed later, we present child poverty rates under different assumptions for child needs (graph a) and scale economies among children (graph b). For now, let us focus on the 'no adjustment' scenario, i.e., ignore differences in needs and child scale economies. Consistent with the overall pattern of resource allocation observed in Figure 2, children experience higher poverty rates than adults, and women face higher poverty rates than men. The global average poverty rate for men stands at approximately 18.5%, while for women, it is significantly higher at 29.5%—a 59% increase relative to men. Among children, the poverty rate is even more striking, averaging 74.5% under the 'no adjustment' scenario.

[17] This assumption is not rejected in recent studies (e.g., Menon et al., 2012; Bargain et al., 2022; Dunbar et al., 2013), with some exceptions (Bargain et al., 2023).

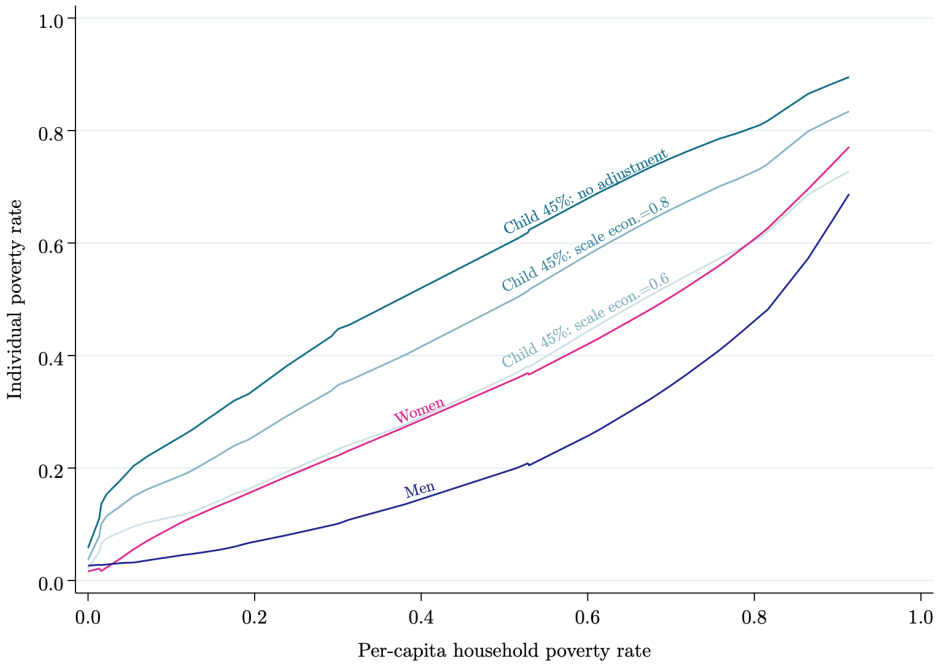
[18] It ranges from -0.0044 (0.00176) for Kenya to 0.0023 (0.00381) for Ethiopia.

Figure 3: Individual versus Per-Capita Household Poverty
(Poverty Line at $3.2/day, 2011 PPP)

(a) Variation in child needs assumptions



(b) Variation in assumed levels of scale economies among children



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates locally weighted fits of country-level individual poverty rates of men, women, and children on per-capita household poverty estimates. Poverty rates are calculated for the sample of households with men, women, and children. Individual poverty rates are based on predicted resource shares for women, men, and children. Results for child poverty are presented for four equivalence scales in graph (a): (i) the same as an adult (no adjustment), (ii) 60% of an adult, (iii) 45% of an adult, and (iv) 30% of an adult; and for three levels of scale economies in graph (b), assuming 45% equivalence scale for child needs: (i) 1.0, (ii) 0.8, and (iii) 0.6.

We observe a monotonic but non-linear relationship between individual and per-capita poverty, reflecting the pattern of intra-household inequality described earlier. Specifically, in the richest countries (lowest per-capita household poverty levels on the graph), individual poverty rates are low due to higher overall wealth while poverty gaps between men, women, and children are smaller because intra-household inequality is small. At the other extreme, in the poorest countries, individual poverty rates are high across all groups, but differences between men, women, and children are minimal—simply because everyone in the household is poor, as previously suggested. For child poverty in particular, it first rises faster than for adult then increases more slowly, as we move from left to right, because intra-household inequality increases then stabilizes as living standards decline. This non-linear trend is also evident when using the \$1.9/day poverty line, commonly used for low-income countries (Ravallion, 2020), as illustrated in Figure A7 in the appendix.

Accounting for Differences in Needs. A usual but key unknown is the difference in needs between adults and children. This aspect is often overlooked, while it may help explain part of the child-adult inequality revealed by resource share estimations (see the discussions in Cockburn et al., 2009 and Bargain et al., 2022). To address this, we conduct sensitivity analyses, setting child needs at 60%, 45%, or 30% of an adult's needs. Before commenting the results, note that there is no consensus on how to adjust consumption needs for children (though equivalence scales exist for nutritional requirements, see e.g., FAO/WHO/UNU, 1985). In standard poverty analyses, equivalence scales account for both differences in needs and adult economies of scale. For instance, the modified OECD equivalence scale assigns a weight of 1 to the first adult, 0.5 to each additional adult, and 0.3 to each child. This implies that a child represents 60% of an adult under full economies of scale (0.3/0.5) and 40% of an average adult in a household (0.3/(1.5/2). This roughly corresponds to the range between our first two adjustment scenarios. With the modified OECD weights, each child of a household with two adults and two children should receive 14.3% of total household resources (0.3/2.1), assuming an egalitarian allocation proportional to needs. This fraction likely represents a lower bound of children's resource shares in wealthier countries (see Bargain et al., 2023). This is indeed the order of magnitude for the richest countries in our sample : per-child shares reach 14% in Argentina and exceed 20% in Uruguay and Chile. In contrast, much smaller child shares are found in poorer countries—we find an average of 8.3% in our international sample. Those lower shares reflect higher fertility levels, as discussed, but may also reveal an overestimation of children's needs in standard equivalence scales. Building on this reasoning, we recompute child poverty under the different assumptions about child

needs, from 30% to 60%. These flat-rate adjustments are relatively conservative, and 30% can be seen as an extreme lower bound. The 60% adjustment is widely used (e.g., Dunbar et al., 2013) and already more conservative than nutrition-based scales.[19] The 45% serves as a midpoint between these two estimates. Strikingly, graph (a) of Figure 3 shows that the large child-adult poverty gaps persist with the 60% and 45% adjustments, especially in countries with intermediate living standards. The child-women gap shrinks or disappears only when assuming extremely low child needs (30%) (see Figure A6 for country-specific gaps under the different adjustment scenarios).[20]

Joint Consumption among Siblings and Scale Economies. It is possible that children's lower resource shares and higher poverty rates compared to adults are not explained solely by reasonable differences in needs and genuine inequalities. A complementary explanation lies in economies of scale among children, such as reusing siblings' clothing. To explore this, we examine the relationship between household budget shares for child clothing and per-capita expenditure in Figure A2 in the appendix. The results show a moderately positive correlation, which could suggest lower allocations to children in poor households but may also reflect more frequent sharing of clothing (and other goods) among siblings. Strikingly, the literature on scale economies among children remains very limited. Previous studies, such as Browning et al. (2013), Bargain and Donni (2012), and Bargain et al. (2023), have primarily focused on scale economies for adults, using data on singles for identification. To our knowledge, the only attempt to estimate scale economies among children is Calvi et al. (2023), which finds that economies of scale can be significant in large families in Bangladesh and Mexico.[21] Drawing from these results, we recompute child poverty at different levels of scale economies among siblings. We consider three scenarios: 1.0 (no gains), 0.8 (an intermediate case), 0.6 (maximum gains, e.g., if children frequently reuse goods already consumed by their siblings). Graph (b) of Figure 3 plots child poverty rates under these scenarios, fixing child needs at 45% of an adult's. At both the 'no adjustment' (1) and the intermediate scenario (0.8) for scale economies, child poverty incidence remains higher than adults'. However, the child-woman poverty gap closes when assuming the highest level of joint consumption (0.6).

[19] Age-based estimates from the FAO indeed suggest that children under 10 require about 70% of an adult's needs. These scales concern nutrition only but are an interesting approximation, as food represents the largest part of consumption for poor countries.

[20] On average, across our international sample, child poverty rates remain significantly higher than adult poverty rates for reasonable adjustment for needs. At the \$3.2/day threshold, child poverty rates stand at 59.8% when needs are set at 60% of an adult's, 49.5% when set at 45%, and 34.6% when set at 30%. Only in the last case, the child poverty rate is close to women's (29%). Using the \$1.9/day threshold, child poverty rates reach 40.8%, 30.6% and 18.7% under these scenarios, respectively (see Figure A7).

[21] Their results show that scale economies are larger in Mexico, where a smaller proportion of the household budget is allocated to food (a typically non-shared good), given the country's higher income levels.

This is driven by countries at intermediate development levels, while a gap reversal may appear at the extremes, especially among the poorest countries (such as Malawi) where baseline gaps were null, given poverty prevalence among all family members (see Appendix Figure A6).

To further investigate country-level patterns, we conduct a detailed analysis for each country, applying six levels of scale economies among children, ranging from 1.0 (no economies) to 0.5 (maximum economies), with child needs set at 45% of an adult's. Figure A8 plots the estimated child-woman poverty gap across countries, at two poverty thresholds. In line with the trends in Figure 3, the poverty gap closes in many countries under stronger scale economies, but remain for some others. The policy implications are important, especially in terms of mistargeting. Potential intra-household inequality implies a higher risk of individual poverty compared to traditional per-capita poverty measures, which are typically used for the targeting of social programs. Poor individuals may be found within households deemed non-poor according to the per-capita approach (see also Brown et al., 2021). In Figure A9, we illustrate this 'poverty mismatch', computed as the proportion of poor individuals (based on our measure) living in non-poor households (under the per-capita approach) for children, women, and men. We assume a universal child needs adjustment of 45% and present two scenarios regarding scale economies (no adjustment and conservative adjustment). With the \$3.2/day poverty line and under the scenario without adjustment for scale economies, 23% of children are poor but live in non-poor households, while this misclassification is virtually zero for men. In another scenario, we assume gap-minimizing scale economies, as derived from Figure A8. In this case, 11% of children remain misclassified, which is partly due to their higher poverty rates in countries where the child-women poverty gap is not closed. They represent around a fifth of all *poor* children internationally (and a lot more in the countries where the gap is not closed), underscoring the significant extent of potential mistargeting that may persist even in this relatively conservative setup.

Micro-Level Evidence. The discussion above was based on country-level estimates, reflecting how country-specific coefficients capture dimensions that may explain variations in child poverty, such as culture/preferences and living standards. We now shift the analysis to the micro level to examine how demographic structures influence resource allocation within households. As seen before, child resource shares increase with the number of children but at a decreasing rate, i.e., per-child shares decrease with family size (cf. Figure A4). In international comparisons, this pattern implied lower child resource shares in poorer countries, interpreted as a consequence of the standard quality-

quantity trade-off and, possibly, some degrees of scale economies among siblings. We now examine whether these patterns also hold at the country level. For each country in Figure 4, we plot average child shares and the number of children against household per-capita expenditure (using 20 equal-sized bins based on the distribution of per-capita household expenditure). We focus on a selection of countries used in the next section for cross-validation with nutrition data, but the central result obtained here generalizes to all countries in our international sample. Namely, and in line with country-level patterns, we observe that richer households tend to have fewer children and allocate more resources per child. This finding is once again consistent with interpretations based on the quantity-quality trade-off and possible child scale economies among poorer households.

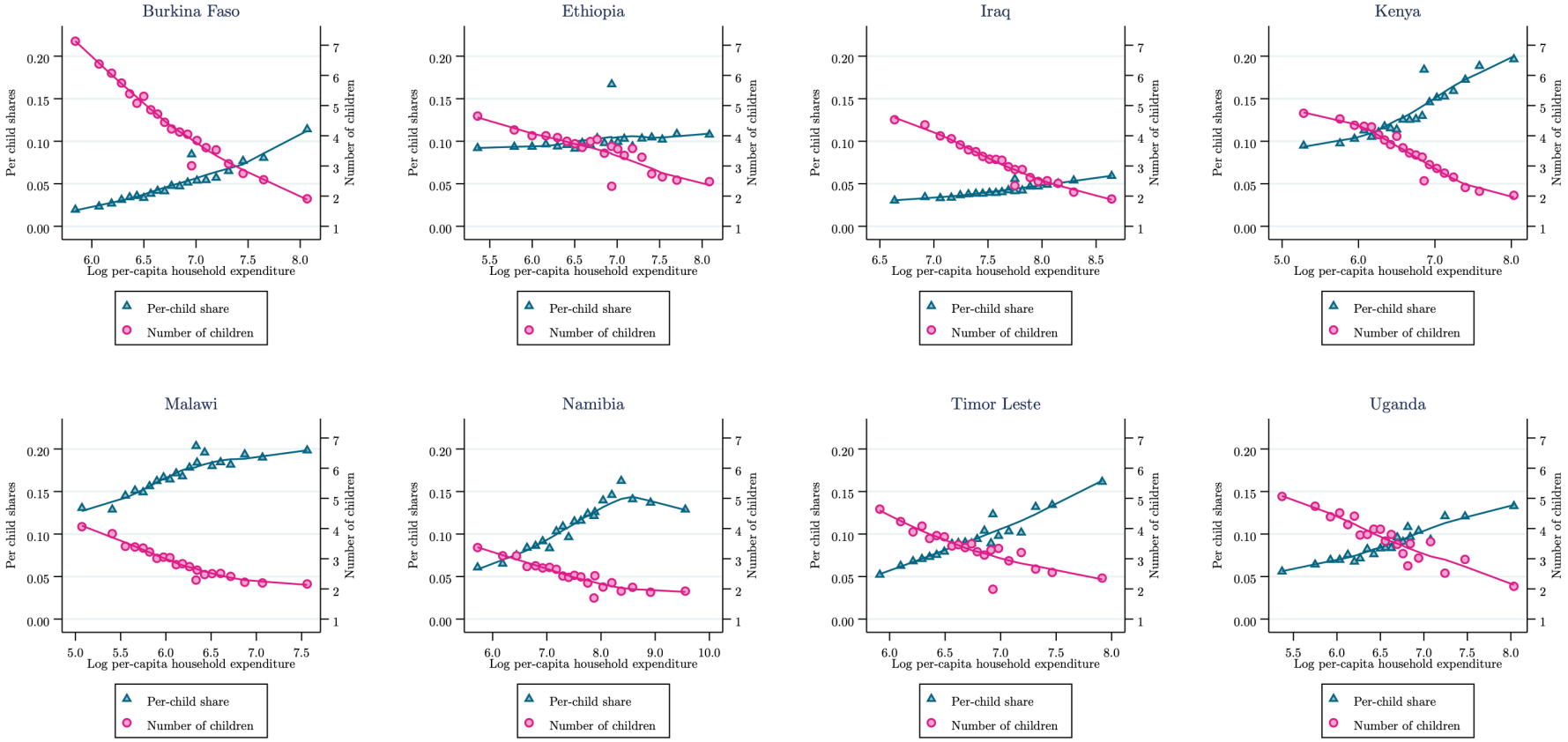
3.3 Cross-Validation with Nutrition

Our results rely on the validity of resource-share estimation methods, a topic that has received increasing attention in recent literature (notably Tommasi and Wolf, 2016, 2018; Bargain et al., 2022). In this final section, we propose a cross-validation exercise using nutritional proxies, which also enrich our international comparisons. Given that child deprivation in consumption is expected to be closely linked to nutritional deprivation, we examine whether our findings on resource allocation are reflected in nutrition-based indicators. We focus on child *wasting* as a short-term indicator of nutrition, more directly comparable to current child access to resources than other nutrition measures. We nonetheless provide sensitivity checks using child *stunting*.[22] A key distinction between consumption- and nutrition-based approaches is that the former relies on identifiable expenditure data (e.g., clothing), while the latter is based on nutrition proxies (derived from child weight and height). Establishing consistency between these two approaches would provide valuable cross-validation, reinforcing the robustness of our findings.

Macro Comparisons. We begin by comparing the country-level prevalence of child wasting and stunting—measured as the proportion of wasted or stunted children under five, as reported by the World Health Organization (WHO)—against two poverty measures: per-capita poverty (which assumes equal resource distribution within households based on per-capita household consumption) and individual child poverty (derived from our resource share estimates). Cross-country correlation coefficients, reported in Panel A of Table A9, indicate that child-specific poverty estimates tend to exhibit a stronger corre-

[22] Wasting (or acute malnutrition) refers to low weight-for-height and is widely used as a proxy for short-term food deprivation or illness. Stunting is measured as low height-for-age and serves as an indicator of chronic malnutrition, carrying long-term developmental risks. Stunting reflects a history of undernutrition and may be less directly tied to child resources at a specific point in time.

Figure 4: Average Number of Children and Per-Child Shares by Living Standards within Country (Selected Countries)



Source: Authors' estimations using the data from household expenditure surveys for eight countries that record micro-level information on child anthropometrics. *Notes:* Graphs illustrate the number of children and per-child resource shares, averaged over 20 bins of per-capita household expenditure, by log per-capita household expenditure. Smooth lines are based on locally weighted regressions of the average number of children on log per-capita household expenditure.

lation with child wasting than per-capita poverty (assuming child needs at 45% of an adult's). Individual child poverty accounts not only for the overall welfare of households but also for the amount of resources accruing specifically to children if our method is correct. In this sense, the stronger correlation with child nutrition provides reassuring evidence of its validity. This result holds consistently for both the \$3.2/day and \$1.9/day poverty lines (and for stunting, in Panel B, with the latter poverty line). We will see that it generally holds also at country-level.

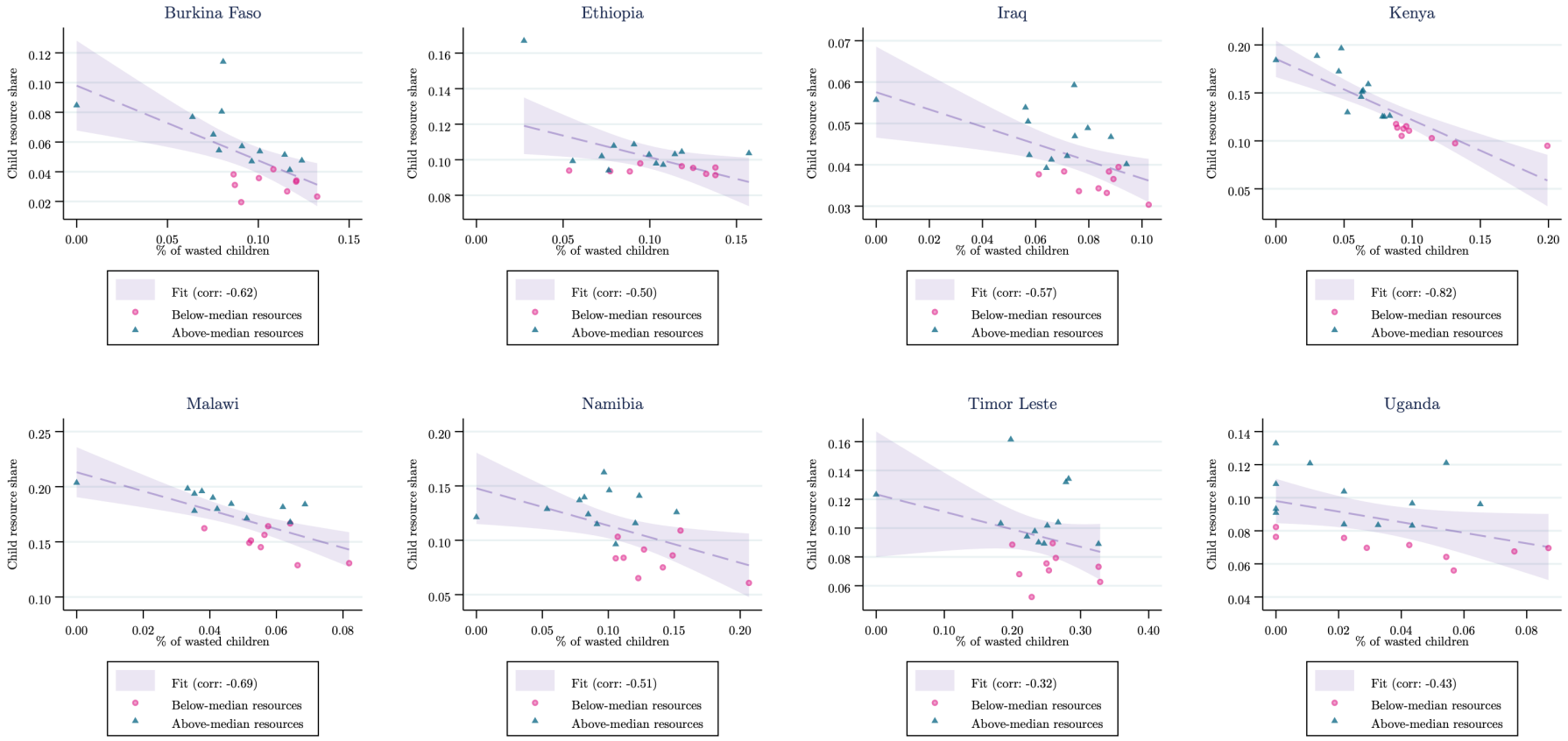
Nonetheless, these results remain suggestive: the inequality component captured in child poverty measures may largely reflect the previously documented correlation between living standards and intra-household inequality (see Figure 2). To investigate this further, we regress country-level child wasting rates on both per-capita poverty and average child resource shares. The results, presented in Table 1 for the \$3.2/day poverty line, confirm the expected role of per-capita poverty (column 1) and child resource shares (column 2), but most importantly, also shows their combined influence (column 3). In other words, child-specific deprivation, as measured by our resource-share estimates, has a significant impact on child wasting conditional on household per-capita poverty. The inclusion of child resource shares actually leads to a substantial increase in the explained variance of child wasting (as reflected in the higher adjusted R-squared), reinforcing the idea that child malnutrition is not solely driven by poverty but also by unequal resource allocation within families. Similar results are obtained using the \$1.9/day poverty line, as reported in Table A10.

Table 1: Correlation of Child Resource Shares with Child Wasting
(Poverty Line at \$3.2/day, 2011 PPP)

	Prevalence of child wasting (reported by WHO)			Proportion of wasted children in the household (calculated in microdata)		
	(1)	(2)	(3)	(4)	(5)	(6)
Per-capita household poverty	0.069**		0.066**	0.022***		0.021***
	(0.023)		(0.022)	(0.003)		(0.003)
Per-child share		-0.279**	-0.258*		-0.091***	-0.083**
		(0.131)	(0.121)		(0.035)	(0.035)
Country FE	n.a	n.a	n.a	YES	YES	YES
Observations	44	44	44	31,060	31,060	31,060
Adjusted R-squared	0.152	0.077	0.219	0.013	0.011	0.013

Source: Authors' estimations using the data from household expenditure surveys for 44 countries, WHO reports on wasting (columns 1-3), and data from household expenditure surveys for seven countries that record micro-level information on child anthropometrics (columns 4-6). *Notes:* Table reports the coefficients from regressions of child wasting (children up to 5 years of age) against per-capita poverty and estimated child shares. Timor Leste is excluded because of extreme child-wasting prevalence in 2007. Child needs are set at 45% of an adult. Households with men, women, and children. Standard errors in parentheses. *, **, *** indicate 10%, 5% and 1% significance level.

Figure 5: Micro Cross-Validation: Per-Child Resource Shares and Household Welfare vs. Child Wasting Prevalence (Selected Countries)



*Source:*Authors' estimations using the data from household expenditure surveys for eight countries that record micro-level information on child anthropometrics. *Notes:* Graphs illustrate per-child shares by the prevalence of child wasting averaged over 20 bins of per-capita household expenditure, differentiating between households with above- or below-median per-capita resources. Correlations between child resource shares and child wasting are reported in legends.

Micro Comparisons. We extend this cross-validation exercise to the micro level by leveraging anthropometric data available for selected countries. Specifically, we compare the prevalence of child wasting (or stunting) with estimated child resources shares or poverty rates across detailed expenditure groups in each population. While our macro-validation relied on WHO country-level nutrition statistics, which are derived from heterogeneous data sources across countries, this micro-validation approach focuses on eight surveys within our global sample that provide detailed information on children's weight, height, and age in months. This allows us to compute standardized measures of wasting and stunting, ensuring greater consistency in the analysis.[23] In Figure 5, we plot average per-child resource shares alongside the proportion of wasted children for each country, using 20 bins based on the distribution of per-capita household expenditure. To highlight disparities, we distinguish between richer households (green triangles) and poorer households (pink circles). The results indicate that nutritional deprivation is present in both groups, though with notable differences. There appears to be a complementarity between inequality and poverty: wasted children tend to live in both poorer and more unequal households. In some countries, such as Kenya, poverty alone seems to be a strong predictor of child wasting, suggesting that simply living in a poor household is sufficient to increase the likelihood of undernutrition. However, even in such settings, inequality still plays a role. Across consumption groups, we observe a negative correlation between child resource shares and undernourishment, reinforcing the idea that unequal resource allocation within households contributes to child nutritional deprivation, beyond the effect of household poverty alone.[24]

We further investigate the correlation between child undernutrition and both per-child and household per-capita poverty at the micro level. Table A9 reports correlation coefficients for each of the eight selected countries, showing that child wasting tends to be more strongly correlated with child poverty than with household per-capita poverty, both under the \$3.2 and \$1.9 poverty lines. Results hold for all countries excepted Uganda when using wasting as the nutritional indicator (all countries but one when using stunting). Additionally, we regress child wasting on household per-capita poverty and child resource shares, using pooled microdata from the eight countries. To prevent overrepresentation of certain countries, we weight observations by the inverse of country sample

[23] For each child, we construct weight-for-height and height-for-age z-scores, using WHO's `anthro` package in Stata for standardization. A child is considered wasted (stunted) if her weight-for-height (height-for-age) is two standard deviations below the average of her reference group (i.e. z-score<-2).

[24] Figure A10 presents similar results for stunting. Additionally, our findings align with those of Brown et al. (2019), who demonstrates that child undernutrition is prevalent across the wealth distribution in 30 African countries and that a portion of it can be attributed to intra-household inequality, specifically inequality in nutritional status.

size. The results, presented in Table 1 (and Table A10 for the $1.9/day poverty line), confirm that child wasting is strongly associated with poverty in general (column 4) but also highlight that intra-household inequality plays a significant additional role (column 6), reinforcing the importance of resource allocation dynamics within households in explaining child malnutrition.

3.4 Global Inequality Decomposition

Estimating individual resource shares at a global scale enables an original decomposition of international consumption inequality *between individuals*, disentangling three components: between-country, between-household, and within-household. This decomposition clarifies the role of intra-household dynamics in global inequality and highlights the potential measurement bias that arises from neglecting intra-household disparities. To achieve this, we pool individual-level data from the 45 countries in our sample, which comprises approximately 2.4 million individual observations in total, and 1.7 million observations when focusing specifically on households with at least one man, one woman, and one child.

Table 2 first presents the decomposition of inequality in individual consumption at the global level. We employ two decomposable inequality measures: the variance of log individual consumption and the Theil index of individual consumption. Building upon the earlier discussion on whether low child resource shares reflect genuinely lower needs or joint consumption among siblings, we examine several scenarios: child needs at 60%, child needs at 45%, and child needs at 45% augmented by scale economies that minimize the child-woman poverty gap. The percentage contribution of each component is reported in parentheses to facilitate comparison. Our decomposition results naturally vary across scenarios, indices, and regions, but consistently highlight the significant role of within-household inequality. At the global level, approximately one-third of total inequality is attributable to differences across countries, which logically changes little across scenarios. The remaining decomposition varies by scenario and index. Specifically, the global contribution of *intra*-household inequality ranges from 13% (using the Theil index under the scenario of low child costs, i.e., where reduced child shares do not necessarily indicate inequitable intra-family resource allocation) up to 32% (using the variance measure, with standard child needs and no scale economies). Despite this variability, the central message is clear: a substantial portion of consumption inequality remains hidden when intra-household disparities are disregarded, regardless of the discrepancies between child expenditure and actual child welfare.

Table 2 also present decomposition results separately for Latin America and (mainly sub-

Saharan) Africa, i.e., the two largest regions covered in our sample. We observe a higher level of overall inequality in Africa compared to Latin America. For the standard scenario (child needs at 60%, no scale economies), this difference mainly stems from larger inequality between countries and within households, while inequality between households is large–and the main contributor–in both continents. Despite Latin America being one of the most unequal region in the world in terms of income, it is not surprising to see both less economic dispersion across countries, compared to Africa, and lower degrees of within-household disparities in consumption sharing, as discussed.

Table 2: Decomposition of global inequality in individual consumption

	Variance of log individual expenditure				Theil of individual expenditure			
	Overall	Between countries	Between HHs within countries	Within HHs	Overall	Between countries	Between HHs within countries	Within HHs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Global								
Child 60%: no ES	1.15	0.34	0.44	0.37	0.53	0.16	0.26	0.11
		(30%)	(38%)	(32%)		(30%)	(50%)	(20%)
Child 45%: no ES	1.04	0.34	0.44	0.27	0.51	0.16	0.26	0.08
		(32%)	(42%)	(26%)		(32%)	(52%)	(16%)
Child 45%: ES minimizing child-women poverty gap	0.92	0.31	0.44	0.16	0.48	0.15	0.27	0.06
		(34%)	(48%)	(18%)		(31%)	(56%)	(13%)
Latin America								
Child 60%: no ES	0.76	0.05	0.46	0.24	0.37	0.04	0.26	0.07
		(7%)	(61%)	(32%)		(11%)	(70%)	(20%)
Child 45%: no ES	0.71	0.06	0.46	0.19	0.37	0.05	0.26	0.06
		(9%)	(65%)	(26%)		(13%)	(71%)	(17%)
Child 45%: ES minimizing child-women poverty gap	0.67	0.06	0.47	0.14	0.36	0.04	0.26	0.05
		(8%)	(70%)	(21%)		(10%)	(74%)	(15%)
Africa								
Child 60%: no ES	1.24	0.24	0.53	0.47	0.70	0.14	0.38	0.17
		(19%)	(43%)	(38%)		(20%)	(55%)	(25%)
Child 45%: no ES	1.09	0.23	0.52	0.35	0.66	0.14	0.39	0.13
		(21%)	(48%)	(32%)		(21%)	(59%)	(20%)
Child 45%: ES minimizing child-women poverty gap	0.94	0.21	0.54	0.20	0.59	0.11	0.39	0.09
		(22%)	(57%)	(21%)		(19%)	(65%)	(15%)

Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Table reports the decomposition of inequality in individual consumption into between-country, between-household, and within-household components. Inequality is based on individual resources (obtained by applying estimated resource shares to total household expenditure), with adjustments for child needs (at 60% or 45% of an adult) and scale economies among children. Scale economies that minimize country-specific child-women poverty gap (at the $3.2/day line) are determined based on Figure A8. Estimates are based on the pooled sample of individuals from households with children, women, and men in each group of countries (around 1.7 million individuals in the global sample, 640 thousand individuals in Latin America, and 630 thousand individuals in Africa). "Overall" indicates total inequality across individuals. "Between countries" indicates inequality due to cross-country differences in living standards. "Between HHs within countries" indicates inequality across persons when assuming equal sharing within households. "Within HHs" indicates inequality across persons attributable to intra-household resource sharing.

We provide a more detailed picture of the contribution of within-household inequality

at the country level. Figure A11 illustrates this contribution to total country inequality by levels of living standards (measured by the log mean of per-capita household expenditure), across the three considered scenarios and for both inequality measures. The observed inverted U-shaped pattern in scenarios with relatively higher child needs and no scale economies aligns with earlier findings regarding the fact that intra-household inequality plays a larger role in countries with intermediate levels of development. In particular, intra-household disparities contribute less to overall inequality in contexts of extreme poverty (e.g., Malawi and Madagascar), where household members tend to consume uniformly low amounts. When child-women poverty gaps are largely closed – under the 45% needs adjustment and high scale economies – the contribution of intra-household inequality becomes more uniform across countries.[25]

4 Concluding Remarks

This paper estimates resource shares for children, women, and men using expenditure surveys from 45 countries, primarily low- and middle-income countries, making it the largest study of its kind. It provides a global mapping of gender and age gaps in consumption, which can be translated into individual poverty measures. The data assessment also examines the applicability of recent resource share estimation techniques, which rely on commonly available assignable expenditures such as clothing. Specifically, we provide a classification of countries where intra-household resource distribution can be estimated using this approach, as well as those where it cannot, along with the underlying reasons for these limitations. For the first group, our estimations complement existing international comparisons of gender disparities and child deprivation, offering an individualized perspective on monetary poverty rather than relying on direct observations of individual outcomes based on nutrition or human capital indicators.

The results reveal a substantial gender consumption gap, with women's poverty rate being approximately 60% higher than that of men. Children appear even poorer, which may be attributed to lower needs relative to adults or the presence of scale economies. Our analysis suggests that the child-women poverty gap is almost eliminated on average– but not for all countries– when assuming a high degree of joint consumption among children and child needs being nearly half that of an adult's. We also find that intra-household inequality is highest in the poorest countries and, within countries, among the

[25]The slightly upward trend under this conservative scenario is driven by a reversal of individual welfare within households in richer countries (such as Chile, Uruguay, and Argentina). In these contexts, which initially exhibit smaller intra-household disparities (as shown in Figure 2), accounting for child needs and/or scale economies makes adults appear relatively worse off compared to children. This, in turn, increases both the level and contribution of within-household inequality.

poorest households. This is consistent with higher fertility rates in poorer settings, which result in smaller child resource shares, possibly partially compensated by economies of scale among siblings. Additionally, we provide an extensive cross-validation of these patterns using nutrition proxies. We show that both household poverty and lower redistribution to children within poor households contribute to child undernutrition. This pattern is verified across countries and, within countries, across groups with different consumption levels. This finding is particularly noteworthy, as the two measures—child consumption shares and nutrition proxies—are derived from entirely different data sources: resource shares are identified using assignable clothing expenditures, while wasting measures are based on child weight and height. These results offer reassurance regarding the validity of collective model identification, demonstrating its ability to capture aspects of intra-household consumption inequality. Moreover, they support the view that child undernutrition is not solely a consequence of overall household poverty but also a reflection of inequality within households. The implications of these findings go beyond poverty and inequality measurement, extending to policy evaluation and design. Targeting poor households is essential, as it supports children who may be even poorer than what per-capita measures suggest. However, not all poor children live in poor households, meaning that traditional targeting methods risk exclusion errors. In this respect, our findings extend the conclusions of Brown et al. (2019), which were based on nutrition data, to the domain of consumption poverty.

There are several limitations to this work that should motivate further research. First, the usual concerns regarding identifying assumptions apply, as extensively discussed in recent methodological contributions (Bargain et al., 2022). In particular, resource share identification methods based on Dunbar et al. (2013) rely on transparent but restrictive assumptions, and future research should focus on relaxing preference restrictions or subjecting them to further empirical testing. In this study, we have made one attempt to partially relax another key assumption—namely, the independence of the base—but additional refinements are needed. Second, along the same lines, these methods must be further developed to explicitly account for economies of scale that benefit both adults and children. Addressing this issue is particularly challenging and, in our multi-country framework, could only be approached through sensitivity analyses. However, the contribution of Calvi et al. (2023) provides a promising direction for future advancements in this area. Finally, our work has provided a static picture of the implication of intra-household inequality on a large scale. New research could extend this analysis by exploring dynamic patterns, examining how resource shares evolve over time using multiple expenditure surveys from the same countries when such data is available.

References

Alkire, S. and J. Foster (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics 95*(7), 476–487.

Alkire, S., R. Ul Haq, and A. Alim (2019). The state of multidimensional child poverty in south asia: a contextual and gendered view. *OPHI Working Paper 127, Oxford*.

Aminjonov, U., O. Bargain, M. Colacce, and L. Tiberti (2024). Culture, intra-household distribution and individual poverty. *Economic Development and Cultural Change 73*(1).

Anderson, S. and D. Ray (2010). Missing women: Age and disease. *Review of Economic Studies 77*, 1262–1300.

Baland, J.-M., F. Bourguignon, J.-P. Platteau, and T. Verdier (2020). *The Handbook of Economic Development and Institutions*. Princeton University Press.

Banks, J., R. Blundell, and A. Lewbel (1997). Quadratic engel curves and consumer demand. *Review of Economics and Statistics 79*(4), 527–539.

Bargain, O. (2023). Income sources, intrahousehold allocation and individual poverty. *Review of Income and Wealth*.

Bargain, O. and O. Donni (2012). The measurement of child costs: A rothbarth-type method consistent with scale economies and parents bargaining. *European Economic Review 56*(4), 792–813.

Bargain, O., O. Donni, and I. Hentati (2023). Resource sharing in households with children: A generalized model and empirical evidence from the uk. *Journal of the European Economic Association 20*(6), 2468–2496.

Bargain, O., O. Donni, and P. Kwenda (2015). Intrahousehold distribution and poverty: Evidence from côte d'ivoire. *Journal of Development Economics 107*, 262–276.

Bargain, O., P. Kwenda, and M. Ntuli (2018). Gender bias and the intrahousehold distribution of resources: Evidence from african nuclear households in south africa. *Journal of African Economies 27/2*, 201–226.

Bargain, O., G. Lacroix, and L. Tiberti (2022). Intrahousehold resource allocation and individual poverty: Assessing collective model predictions using direct evidence on sharing. *The Economic Journal 132*(643), 865–905.

Batana, Y., M. Bussolo, and J. Cockburn (2013). Global extreme poverty rates for children, adults and the elderly. *Economics Letters 120*(3), 405–407.

Becker, G. S. (1960). An economic analysis of fertility. In *Demographic and economic change in developed countries*, pp. 209–240. Columbia University Press.

Belete, G., M. Menon, and F. Perali (2019). Children's resources and welfare in male-headed and single-mother households: A collective consumption evidence from ethiopia. In *Special IARIW-World Bank Conference "New Approaches to Defining and Measuring Poverty in a Growing World" Washington, DC, November*, pp. 7–8.

Betti, G., L. Mangiavacchi, and L. Piccoli (2020). Women and poverty: insights from individual consumption in albania. *Review of Economics of the Household 18*(1), 69–91.

Blundell, R. and A. Lewbel (1991). The information content of equivalence scales. *Journal of Econometrics 50*(1-2), 49–68.

Blundell, R. and J.-M. Robin (1999). Estimation in large and disaggregated demand systems: An estimator for conditionally linear systems. *Journal of Applied Econometrics 14*, 209–232.

Bose-Duker, T., I. Gaddis, T. Kilic, V. Lechene, and K. Pendakur (2021). Diamonds in the rough?: repurposing multi-topic surveys to estimate individual-level consumption poverty. *World Bank Policy Research Working Paper 9661*.

Bourguignon, F., M. A. Browning, and P. A. Chiappori (2009). Efficient intra-household allocations and distribution factors: Implications and identification. *Review of Economic Studies 76*(2), 503–528.

Bourguignon, F. and P.-A. Chiappori (1992). Collective models of household behavior: an introduction. *European Economic Review 36*(2-3), 355–364.

Bredenkamp, C., L. R. Buisman, and E. Van de Poel (2014, 04). Persistent inequalities in child undernutrition: evidence from 80 countries, from 1990 to today. *International Journal of Epidemiology 43*(4), 1328–1335.

Brown, C., R. Calvi, and J. Penglase (2021). Sharing the pie: An analysis of undernutrition and individual consumption in bangladesh. *Journal of Public Economics 200*, 104460.

Brown, C., M. Ravallion, and D. van de Walle (2019). Most of africa's nutritionally deprived women and children are not found in poor households. *Review of Economics and Statistics 101*(4), 631–644.

Browning, M., P.-A. Chiappori, and A. Lewbel (2013). Estimating consumption economies of scale, adult equivalence scales, and household bargaining power. *Review of Economic Studies 80*(4), 1267–1303.

Calvi, R. (2020). Why are older women missing in india? the age profile of bargaining power and poverty. *Journal of Political Economy 128*(7), 2453–2501.

Calvi, R., J. Penglase, D. Tommasi, and A. Wolf (2023). The more the poorer? resource sharing and scale economies in large families. *Journal of Development Economics 160*.

Cameron, L., D. Contreras Suarez, and S. Wieczkiewicz (2023). Child marriage: using the indonesian family life survey to examine the lives of women and men who married at an early age. *Review of Economics of the Household 21*(3), 725–756.

Chen, S. and M. Ravallion (2010). The developing world is poorer than we - thought, but no less successful in the fight against poverty. *The Quarterly Journal of Economics 125*(4), 1577–1625.

Cherchye, L., B. De Rock, and F. Vermeulen (2011). The revealed preference approach to collective consumption behaviour: Testing and sharing rule recovery. *The Review of Economic Studies 78*(1), 176–198.

Chiappori, P.-A. (1988). Rational household labor supply. *Econometrica 56*, 63–89.

Chiappori, P.-A. (1992). Collective labor supply and welfare. *Journal of Political Economy 100*(3), 437–467.

Cockburn, J., A. Dauphin, and M. A. Razzaque (2009). Child poverty and intra-household allocation. *Children, Youth and Environments 19(2)*, 36–53.

Deaton, A. (1989). Looking for boy-girl discrimination in household expenditure data. *World Bank Economic Review 3(1)*, 1–15.

Deaton, A. (1997). *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore: Johns Hopkins University Press.

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

Doepke, M., A. Hannusch, F. Kindermann, and M. Tertilt (2022). The economics of fertility: A new era. Technical report, National Bureau of Economic Research.

Dunbar, G., A. Lewbel, and K. Pendakur (2013). Children's resources in collective households: Identification, estimation and an application to child poverty in Malawi. *American Economic Review 103*, 438–471.

Dunbar, G. R., A. Lewbel, and K. Pendakur (2021). Identification of random resource shares in collective households without preference similarity restrictions. *Journal of Business & Economic Statistics 39*(2), 402–421.

D'Souza, A. and S. Tandon (2019). Intrahousehold Nutritional Inequities in Rural Bangladesh. *Economic Development and Cultural Change 67*(3), 625–657.

Echeverría, L., M. Menon, F. Perali, and M. Berges (2019). Intra-household inequality and child welfare in argentina. Working Paper Nro. 241, CEDLAS, Universidad de La Plata.

FAO/WHO/UNU (1985). Report of a joint expert consultation: energy and protein requirements. Technical report, Technical Report Series 724, WHO, Geneva.

Ferreira, F. H., S. Chen, A. Dabalen, Y. Dikhanov, N. Hamadeh, D. Jolliffe, A. Narayan, E. B. Prydz, A. Revenga, P. Sangraula, et al. (2016). A global count of the extreme poor in 2012: data issues, methodology and initial results. *The Journal of Economic Inequality 14*, 141–172.

Gómez, R. V. and A. B. Coelho (2017). Intra-household consumption inequality: Empirical evidence from brazil. Mimeo.

Guo, R., J. Yi, and J. Zhang (2022). The child quantity–quality trade-off. *Handbook of Labor, Human Resources and Population Economics*, 1–23.

Haddad, L. and J. Hoddinott (1994). Women's income and boy-girl anthropometric status in the cote d'ivoire. *World Development 4*(22), 543–553.

Haddad, L. and R. Kanbur (1990a). How serious is the neglect of intra-household inequality? *The Economic Journal 100*(402), 866–881.

Haddad, L. and R. Kanbur (1990b). Is there an intra-household kuznets curve? *World Bank PRE Working Paper Series*.

Heaton, T. (2011, 06). Does religion influence fertility in developing countries. *Population Research and Policy Review 30*, 449–465.

Hoddinott, J. and E. Skoufias (2004). The impact of progresa on food consumption. *Economic Development and Cultural Change 53*(1), 37–61.

Iglesias, W. J. and A. B. Coelho (2020). Poverty and inequality within brazilian households: an application of a collective consumption model. *Empirical Economics 58*, 1923–1952.

Jayachandran, S. (2015). The roots of gender inequality in developing countries. *Annual Review of Economics 7*(1), 63–88.

Jolliffe, D. and S. K. T. Baah (2024). Identifying the poor–accounting for household economies of scale in global poverty estimates. *World Development 179*, 106593.

Kennedy, E., G. Binder, K. Humphries-Waa, T. Tidhar, K. Cini, L. Comrie-Thomson, C. Vaughan, K. Francis, N. Scott, N. Wulan, G. Patton, and P. Azzopardi (2020). Gender inequalities in health and wellbeing across the first two decades of life: an analysis of 40 low-income and middle-income countries in the asia-pacific region. *Lancet Global Health 8*, e1473–88.

Klasen, S. and F. Lamanna (2009). The impact of gender inequality in education and employment on economic growth: New evidence for a panel of countries. *Feminist Economics 15*(3), 91–132.

Lanjouw, P. and M. Ravallion (1995). Poverty and household size. *The Economic Journal 105*(433), 1415–1434.

Lewbel, A. (2010). Shape-invariant demand functions. *Review of Economics and Statistics 92*(3), 549–56.

Lewbel, A. and K. Pendakur (2022). *Inefficient collective households: Cooperation and consumption*, Volume forthcoming.

Mangiavacchi, L., F. Perali, and L. Piccoli (2018). Intrahousehold distribution in migrant-sending families. *Journal of Demographic Economics 84*(1), 107–148.

Menon, M., K. Pendakur, and F. Perali (2012). On the expenditure-dependence of children's resource shares. *Economics Letters 117*(3), 739–742.

Munoz Boudet, A. M., P. Buitrago, B. Leroy De La Briere, D. L. Newhouse, E. C. Rubiano Matulevich, K. Scott, and P. Suarez-Becerra (2018). Gender differences in poverty and household composition through the life-cycle: A global perspective. *World Bank Policy Research Working Paper* (8360).

Penglase, J. (2021). Consumption inequality among children: Evidence from child fostering in malawi. *The Economic Journal 131*(634), 1000–1025.

Ravallion, M. (2015). On testing the scale sensitivity of poverty measures. *Economics Letters 137*, 88–90.

Ravallion, M. (2020). On measuring global poverty. *Annual Review of Economics 12*, 167–188.

Sokullu, S. and C. Valente (2022). Individual consumption in collective households: Identification using repeated observations with an application to progresa. *Journal of Applied Econometrics 37*(2), 286–304.

Steckel, R. H. (1995). Stature and the Standard of Living. *Journal of Economic Literature 33*(4), 1903–1940.

Tommasi, D. (2019). Control of resources, bargaining power and the demand of food: Evidence from progresa. *Journal of Economic Behavior & Organization 161*, 265–286.

Tommasi, D. and A. Wolf (2016). Overcoming weak identification in the estimation of household resource shares. Working Paper 2016-12, ECARES.

Tommasi, D. and A. Wolf (2018). Estimating household resource shares: A shrinkage approach. *Economics Letters 163*, 75–78.

World Bank (2018). Poverty and shared prosperity 2018: Piecing together the poverty puzzle.

World Bank and Unicef (2020). *Global estimate of children in monetary poverty: An update*. World Bank.

Appendix

1 Estimation Procedure and Endogeneity

Since the error terms in the empirical model are likely to be correlated across equations, we estimate the system of household Engel curves for different household compositions using Non-Linear Seemingly Unrelated Regressions (NL-SUR). The SUR estimator is iterated until the estimated parameters and error covariance matrices settle (the iterated SUR is equivalent to maximum likelihood with multivariate normal errors). The likely correlation between the error terms in each budget-share function and the log total expenditure is a frequent source of endogeneity, especially if total expenditure suffers from measurement errors. Each budget share equation is therefore augmented with the Wu-Hausman residuals obtained from reduced-form estimations of x on all exogenous variables used in the model along with some instruments, namely a quadratic form of the log household disposable income (see Banks et al. 1997; Blundell and Robin 1999). These instruments prove to be very strong predictors of the log of expenditure (the F statistic on the excluded instruments exceeds the standard threshold in all cases).[26]

[26]For Indian and Moroccan data, income data were unavailable. For India, we use the logarithm of household asset values as the instrument for household expenditure. For Morocco, this information was also missing, so household expenditure was not instrumented.

2 Data Sources and Descriptive Statistics

- Table A1: Description of Non-Included Household Expenditure Surveys
- Table A2: Description of Included Household Expenditure Surveys
- Table A3: Descriptive Statistics, Demographics
- Table A4: Descriptive Statistics, Expenditure
- Figure A1: Per-capita Poverty Rates: Validation with External Sources
- Figure A2: Household Budget Shares for Child Clothing

Table A1: Description of Non-Included Household Expenditure Surveys

Country	Code	WB income group	Survey name	Reason for exclusion	Observations
Afghanistan	AFG	Low	Living Conditions Survey 2016-2017	No access to data	Questionnaires report differentiated clothing expenditure.
Armenia	ARM	Upper middle	Integrated Living Conditions Survey 2016	Not applicable (other issues)	Not possible to identify age cutoff for children clothing expenditure
Azerbaijan	AZE	Upper middle	Household Budget Survey 2005	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Burundi	BDI	Low	Enquête sur les conditions de vie des ménages 2019-2020	No access to data	Questionnaires report differentiated clothing expenditure.
Bosnia and Herzegovina	BIH	Upper middle	Living Standards Measurement Survey 2004 (Wave 4 Panel)	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Belarus	BLR	Upper middle	Household Sample Survey 2020	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Belize	BLZ	Upper middle	Household Expenditure Survey 2008-2009	No access to data	Questionnaires report differentiated clothing expenditure.
Bhutan	BTN	Lower middle	Living Standards Survey 2003	No access to data	Questionnaires report differentiated clothing expenditure.
Botswana	BWA	Upper middle	Multi-Topic Household Survey 2015 - 2016	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Central African Republic	CAF	Low	Enquête Harmonisé sur les Conditions de Vie des Ménages 2021	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
China	CHN	Upper middle	Household income and expenditure and living conditions survey 2022	No access to data	Questionnaires report differentiated clothing expenditure.
Cameroon	CMR	Lower middle	Fith Cameroon household survey (ECAM 5)	No access to data	Questionnaires report differentiated clothing expenditure.
Congo, Dem. Rep.	ZAR	Low	Enquete sur L'Emploi, Le Secteur Informel et sur la Consommation des Menages 2012	No access to data	Questionnaires report differentiated clothing expenditure.
Congo, Rep.	COG	Lower middle	Enquête Congolaise Auprès des Ménages pour le Suivi et l'Evaluation de la Pauvreté 2011	No access to data	Questionnaires report differentiated clothing expenditure.
Comoros	COM	Lower middle	Enquête sur les Dépenses de Consommation des Ménages 2014	Not applicable (other issues)	No detailed household roster data
Cabo Verde	CPV	Lower middle	Inquérito às Despesas e Receitas Familiares 2014-2015	No access to data	Questionnaires report differentiated clothing expenditure.
Djibouti	DJI	Lower middle	Enquête Djiboutienne Auprès des Ménages =Budget Consommation - EDAM/BC 2013	Not applicable (other issues)	Small sample (150 households)
Algeria	DZA	Lower middle	Enquete Nationale sur la Mesure des Niveaux de Vie des Minages Algiriens 2011	No access to data and documentation	Not possible to check if clothing expenditure is differentiated

Description of Non-Included Household Expenditure Surveys (Cont.)

Country	Code	WB income group	Survey name	Reason for exclusion	Observations
Egypt, Arab Rep.	EGY	Lower middle	Household Income, Expenditure, and Consumption Survey, HIECS 2019/2020	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Fiji	FJI	Upper middle	Household Income and Expenditure Survey 2008	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Micronesia, Fed. Sts.	FSM	Lower middle	Household Income and Expenditure Survey 2013-2014	No access to data	Questionnaires report differentiated clothing expenditure.
Gabon	GAB	Upper middle	Enquête Gabonaise pour l'Evaluation et le Suivi de la Pauvreté 2017	No access to data	Questionnaires report differentiated clothing expenditure.
Guinea	GIN	Lower middle	Enquête Légère pour l'Evaluation de la Pauvreté 2012	No access to data	Questionnaires report differentiated clothing expenditure.
Grenada	GRD	Upper middle	Survey of Living Conditions and Household Expenditure and Income 2007-2008	No access to data	Questionnaires report differentiated clothing expenditure.
Guatemala	GTM	Upper middle	Encuesta Nacional sobre Condiciones de Vida 2000	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Honduras	HND	Lower middle	Encuesta Nacional Ingresos y Gastos 2006-2007	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Haiti	HTI	Lower middle	Enquête sur les Conditions de Vie des Ménages après Séisme 2012	No access to data	Questionnaires report differentiated clothing expenditure.
Indonesia	IDN	Upper middle	Indonesia Family Life Survey, Wave 5 (2014)	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Indonesia	IDN	Upper middle	National Socio-Economic Survey 2012	No access to data	Questionnaires report differentiated clothing expenditure.
Iran, Islamic Rep.	IRN	Lower middle	Households Income and Expenditure Survey 2019	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Jamaica	JAM	Upper middle	Survey of Living Conditions 2004	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Jordan	JOR	Lower middle	Household Expenditure and Income Survey 2017	No access to data	Questionnaires report differentiated clothing expenditure.
Kazakhstan	KAZ	Upper middle	Household Budget Survey 2015	No access to data	Questionnaires report differentiated clothing expenditure.
Kyrgyz Republic	KGZ	Lower middle	Kyrgyz Integrated Household Survey 2010	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Cambodia	KHM	Lower middle	Living Standards Measurement Study - Plus 2019-2020	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Kiribati	KIR	Lower middle	Household Income and Expenditure Survey 2019	No access to data	Questionnaires report differentiated clothing expenditure.

Description of Non-Included Household Expenditure Surveys (Cont.)

Country	Code	WB income group	Survey name	Reason for exclusion	Observations
Lao PDR	LAO	Lower middle	Expenditure and Consumption Survey 2018-2019	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Lebanon	LBN	Lower middle	Household Budget Survey 2011	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Liberia	LBR	Low	Household Income and Expenditure Survey (HIES) 2016	Not applicable (other issues)	Aggregate expenditure differs from international references
Sri Lanka	LKA	Lower middle	Household Income and Expenditure Survey 2019	No access to data	Questionnaires report differentiated clothing expenditure.
Lesotho	LSO	Lower middle	Household Budget Survey 2017-2018	No access to data	Questionnaires report differentiated clothing expenditure.
Moldova	MDA	Upper middle	Household Budget Survey 2017	No access to data	Questionnaires report differentiated clothing expenditure.
Maldives	MDV	Upper middle	Household Income and Expenditure Survey 2009-2010	No access to data	Questionnaires report differentiated clothing expenditure.
Marshall Islands	MHL	Upper middle	Household Income and Expenditure Survey 2019	No access to data	Questionnaires report differentiated clothing expenditure.
North Macedonia	MKD	Upper middle	Household Budget Survey 2008	No access to data	Questionnaires report differentiated clothing expenditure.
Myanmar	MMR	Lower middle	Poverty and Living Conditions Survey 2014-2015	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Montenegro	MNE	Upper middle	Household Budget Survey 2013	No access to data	Questionnaires report differentiated clothing expenditure.
Mozambique	MOZ	Low	Inquérito sobre Orcamento Familiar 2014-2015	No access to data	Questionnaires report differentiated clothing expenditure.
Mauritania	MRT	Lower middle	Enquête Permanente sur les Conditions de Vie des ménages 2014	No access to data	Questionnaires report differentiated clothing expenditure.
Mauritius	MUS	Upper middle	Household Budget Survey 2017	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Malaysia	MYS	Upper middle	Household Income, Expenditure and Basic Amenities Survey 2019	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Nicaragua	NIC	Lower middle	Encuesta Nacional de Hogares sobre Medición de Nivel de Vida	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Nepal	NPL	Lower middle	Living Standards Survey 2010-2011	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Peru	PER	Upper middle	Encuesta Nacional de Hogares	No assignable clothing	Clothing expenditure not differentiated by men, women, and children

Description of Non-Included Household Expenditure Surveys (Cont.)

Country	Code	WB income group	Survey name	Reason for exclusion	Observations
Philippines	PHL	Lower middle	Family Income and Expenditure Survey 2021	Not applicable (other issues)	No detailed household roster data
Papua New Guinea	PNG	Lower middle	Household Income and Expenditure Survey 2009-2010	No access to data	Questionnaires report differentiated clothing expenditure.
Russian Federation	RUS	Upper middle	Russian Longitudinal Monitoring Survey (RLMS) 2022	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Russian Federation	RUS	Upper middle	Russian Household Budget Survey	No access to data	Questionnaires report differentiated clothing expenditure
Sudan	SDN	Low	National Baseline Household Survey, NBHS 2009	No access to data	Questionnaires report differentiated clothing expenditure.
Solomon Islands	SLB	Lower middle	Household Income and Expenditure Survey 2012-2013	No access to data	Questionnaires report differentiated clothing expenditure.
El Salvador	SLV	Upper middle	Encuesta de Ingresos y Gastos de los Hogares 2005-2006	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Somalia	SOM	Low	Somaliland Household Survey 2013	Not applicable (other issues)	High proportion of infrequency of clothing purchases
South Sudan	SSD	Low	High Frequency Survey 2015	Not applicable (other issues)	High proportion of missing data in model variables
São Tomé and Príncipe	STP	Lower middle	Inquerito Aos Orcamentos Familiares 2017	No access to data	Questionnaires report differentiated clothing expenditure.
Suriname	SUR	Upper middle	Survey of Living Conditions 2016	Not applicable (other issues)	High proportion of infrequency of clothing purchases
Eswatini	SWZ	Lower middle	Household Income and Expenditure Survey 2009-2010	No access to data	Questionnaires report differentiated clothing expenditure.
Syrian Arab Republic	SYR	Low	Household Income and Expenditure Survey 2003-2004	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Chad	TCD	Low	Enquête Harmonisée sur les Conditions de Vie des Ménages 2018	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Togo	TGO	Low	Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019	Not applicable (other issues)	High proportion of households with flat Engle curve
Thailand	THA	Upper middle	Household Socio-Economic Survey 2019	No access to data	Questionnaires report differentiated clothing expenditure.
Tonga	TON	Upper middle	Household Income and Expenditure Survey 2015-2016	No assignable clothing	Clothing expenditure not differentiated by men, women, and children

Description of Non-Included Household Expenditure Surveys (Cont.)

Country	Code	WB income group	Survey name	Reason for exclusion	Observations
Tunisia	TUN	Lower middle	Enquête Nationale sur le Budget, la Consommation et le Niveau de vie des ménages 2015	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Türkiye	TUR	Upper middle	Household Income and Consumption Expenditures Survey 2019	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Tuvalu	TUV	Upper middle	Household Income, Consumption and Expenditure Survey 2016	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Ukraine	UKR	Lower middle	Household Living Conditions Survey 2019	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Uzbekistan	UZB	Lower middle	Household Budget Survey 2002	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Vietnam	VNM	Lower middle	Household Living Standard Survey 2010	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Vanuatu	VUT	Lower middle	Household income and expenditure survey 2019	No assignable clothing	Clothing expenditure not differentiated by men, women, and children
Samoa	WSM	Lower middle	Household Income and Expenditure Survey 2013	No access to data and documentation	Not possible to check if clothing expenditure is differentiated
Kosovo	XKX	Upper middle	Living Standards Measurement Study 2000	Not applicable (other issues)	Not possible to identify age cutoff for children expenditure
Yemen, Rep.	YEM	Low	Household budget survey 2014	No access to data	Questionnaires report differentiated clothing expenditure.
Zambia	ZMB	Lower middle	Living Conditions Monitoring Survey 2015	No access to data	Questionnaires report differentiated clothing expenditure.
Zimbabwe	ZWE	Lower middle	Income, Consumption and Expenditure Survey 2017-2019	No access to data	Questionnaires report differentiated clothing expenditure.

Table A2: Description of Selected Household Expenditure Surveys

Country	Country code	Year	Survey name	World Bank LSMS	Recall period for clothing expenditure (months)	Sample size for estimation
Angola	AGO	2018	Inquérito Sobre Despesas, Receitas e Emprego em Angola (IDREA) 2018-2019		3	7,329
Albania	ALB	2005	Living Standard Measurement Survey 2005	Yes	6	2,603
Argentina	ARG	2018	Encuesta Nacional de Gastos de los Hogares 2017-2018		1	20,946
Bangladesh	BGD	2015	Bangladesh Integrated Household Survey 2015		12	3,171
Benin	BEN	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019	Yes	12	3,893
Bolivia	BOL	2019	Encuesta de Hogares - 2019		3	11,044
Brazil	BRA	2017	Pesquisa de Orçamentos Familiares 2017-2018		3	53,681
Bulgaria	BGR	2007	Multitopic Household Survey 2007	Yes	12	2,690
Burkina Faso	BFA	2014	Enquête Multisectorielle Continue 2014 - passage 2	Yes	3	7,090
Chile	CHL	2017	Encuesta de Presupuestos Familiares VIII		3	14,497
Colombia	COL	2017	Encuesta Nacional de Presupuestos de los Hogares 2016=2017		3	81,936
Costa Rica	CRI	2018	Encuesta Nacional de Ingresos y Gastos de los Hogares 2018		3	4,863
Cote d'Ivore	CIV	2002	Enquete Niveau de Vie des Menages 2002	Yes	12	7,997
Ecuador	ECU	2011	Encuesta Nacional de Ingresos y Gastos de los Hogares Urbanos y Rurales 2011-2012		6	37,059
Ethiopia	ETH	2015	Ethiopia Socioeconomic Survey 2015-2016, Wave 3	Yes	12	4,052
Gambia	GMB	2015	Integrated Household Survey 2015		3	11,130
Georgia	GEO	2019	Households Incomes and Expenditures Survey 2019		3	9,769
Ghana	GHA	2017	Ghana Living Standards Survey 2017	Yes	12	6,204
Guinea-Bissau	GNB	2019	Inquérito Harmonizado sobre as Condiçöes de vide dos Agreagados Familiares 2018-2019	Yes	12	2,873
India	IND	2011	Household Consumer Expenditure, Type 1: July 2011 - June 2012, NSS 68th Round		12	72,189
Iraq	IRQ	2012	Iraq Household Socio-Economic Survey 2012, Second Round	Yes	3	11,346
Kenya	KEN	2015	Integrated Household Budget Survey 2015-2016		3	16,817
Madagascar	MGD	2011	Enquête Nationale sur le Suivi des Indicateurs des Objectifs du Millénaire pourle Développement		12	8,927
Malawi	MWI	2016	Integrated Household Panel Survey (IHPS) 2016	Yes	3	9,678
Mali	MLI	2014	Enquête Agricole de Conjoncture Intégrée 2014	Yes	6	1,353
Mexico	MEX	2018	Encuesta Nacional de Ingresos y Gastos de los Hogares 2018		3	63,195
Mongolia	MNG	2016	Household Socio-Economic Survey 2016		12	9,046
Morocco	MAR	2013	Enquete Nationale sur la Consommation et les Dépense des Ménages 2013		12	12,031
Namibia	NAM	2015	Household Income and Expenditure Survey, 2015/16		3	4,639
Niger	NER	2014	Enquête National sur les Conditions de Vie des Ménages et Agriculture 2014, Wave 2	Yes	6	1,733
Nigeria	NGA	2019	General Household Survey, Panel 2015-2016, Wave 3	Yes	6	3,262
Pakistan	PAK	2015	Household Integrated Income and Consumption Survey (HIICS) 2015/16		12	17,412
Panama	PAN	2008	Encuesta de Niveles de Vida 2008	Yes	3	8,480
Paraguay	PRY	2011	Encuesta de Ingresos y Gastos y de Condiciones de Vida 2011-2012		3	5,274
Rwanda	RWA	2016	Integrated Household Living Conditions Survey, 2016-2017, VUP		12	12,575
Senegal	SEN	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages 2018-2019	Yes	12	2,260
Serbia	SRB	2007	Living Standards Measurement Survey 2007	Yes	3	3,149
Sierra Leone	SLE	2011	Integrated Household Survey 2011		12	6,109
South Africa	ZAF	2014	Living Conditions Survey 2014/2015		12	8,838
Tajikistan	TJK	2009	Living Standards Survey 2009	Yes	6	974
Tanzania	TZA	2014	National Panel Survey 2014-2015, Wave 4	Yes	12	2,433
Timor Leste	TLS	2007	Timor-Leste - Survey of Living Standards 2007	Yes	12	2,492
Uganda	UGA	2015	National Panel Survey 2015-2016	Yes	12	2,432
Uruguay	URU	2016	Encuesta Nacional de Ingresos y Gastos de los Hogares 2016-2017		3	4,262
West Bank and Gaza	PSE	2016	Palestinian Expenditure and Consumption Survey 2016		1	2,212
Total number of households						**590,949**
Total number of individuals						**2,446,764**

Table A3: Descriptive Statistics, Demographics

Country	Year	Number of men	Number of women	Number of children	Average age of men	Average age of women	Average age of children	Proportion of boys	Urban
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Albania	2005	1.50	1.61	1.99	41.20	39.13	6.96	0.55	0.52
		(0.73)	(0.71)	(0.83)	(8.83)	(9.47)	(3.79)	(0.38)	(0.50)
Angola	2018	1.16	1.17	2.86	34.85	30.37	5.13	0.49	0.62
		(0.47)	(0.47)	(1.47)	(10.48)	(9.27)	(2.78)	(0.34)	(0.49)
Argentina	2018	1.58	1.68	1.59	34.09	33.32	5.17	0.51	1.00
		(0.90)	(0.93)	(0.86)	(10.97)	(8.82)	(2.73)	(0.43)	(0.00)
Bangladesh	2015	1.29	1.38	2.11	40.59	36.43	8.60	0.52	0.10
		(0.55)	(0.60)	(0.97)	(10.18)	(8.98)	(4.08)	(0.38)	(0.30)
Benin	2018	1.17	1.28	3.06	35.61	31.13	5.32	0.51	0.47
		(0.49)	(0.58)	(1.64)	(8.95)	(7.83)	(2.99)	(0.34)	(0.50)
Bolivia	2019	1.38	1.45	1.82	34.01	32.84	6.08	0.50	0.78
		(0.68)	(0.73)	(0.97)	(10.93)	(9.70)	(3.09)	(0.42)	(0.41)
Brazil	2017	1.34	1.39	1.60	37.42	35.85	7.29	0.52	0.75
		(0.66)	(0.68)	(0.87)	(11.35)	(10.16)	(3.89)	(0.44)	(0.43)
Bulgaria	2007	1.40	1.44	1.42	39.39	37.40	7.49	0.51	0.74
		(0.64)	(0.60)	(0.63)	(9.29)	(9.18)	(4.33)	(0.45)	(0.44)
Burkina Faso	2014	1.54	1.78	4.09	38.60	33.96	6.75	0.51	0.36
		(0.92)	(1.07)	(2.57)	(10.84)	(9.33)	(3.19)	(0.31)	(0.48)
Chile	2017	1.36	1.48	1.68	40.62	39.59	8.49	0.51	1.00
		(0.65)	(0.72)	(0.85)	(11.66)	(9.83)	(4.65)	(0.43)	(0.00)
Colombia	2017	1.48	1.63	1.57	35.86	34.71	6.15	0.52	0.93
		(0.79)	(0.87)	(0.83)	(12.24)	(10.18)	(3.30)	(0.44)	(0.26)
Costa Rica	2018	1.44	1.55	1.60	35.70	34.14	6.39	0.53	0.63
		(0.72)	(0.78)	(0.83)	(12.06)	(9.01)	(3.28)	(0.44)	(0.48)
Cote d'Ivore	2002	1.56	1.65	3.53	38.01	32.87	7.52	0.50	0.43
		(0.96)	(1.00)	(2.12)	(11.02)	(9.51)	(3.72)	(0.33)	(0.50)
Ecuador	2011	1.55	1.58	1.87	34.46	33.07	6.17	0.51	0.73
		(0.84)	(0.84)	(1.04)	(11.39)	(9.67)	(3.21)	(0.41)	(0.44)
Ethiopia	2015	1.37	1.31	3.03	38.87	35.49	8.54	0.51	0.27
		(0.68)	(0.61)	(1.60)	(11.84)	(10.14)	(3.75)	(0.34)	(0.44)
Gambia	2015	1.70	2.10	4.61	40.55	35.15	7.38	0.49	0.21
		(1.03)	(1.22)	(2.72)	(11.17)	(8.69)	(3.17)	(0.29)	(0.41)
Georgia	2019	1.64	1.81	1.76	42.77	41.93	5.62	0.51	0.45
		(0.68)	(0.65)	(0.68)	(9.46)	(8.81)	(3.19)	(0.41)	(0.50)
Ghana	2017	1.23	1.33	2.43	37.77	35.12	5.59	0.51	0.38
		(0.55)	(0.63)	(1.34)	(11.74)	(11.27)	(3.10)	(0.38)	(0.49)
Guinea-Bissau	2018	1.85	2.13	3.52	37.62	35.03	6.39	0.50	0.34
		(1.14)	(1.25)	(2.15)	(10.56)	(9.22)	(2.83)	(0.33)	(0.48)
India	2011	1.51	1.55	2.07	38.09	35.24	6.54	0.55	0.38
		(0.81)	(0.76)	(1.00)	(8.56)	(8.28)	(3.73)	(0.33)	(0.49)
Iraq	2012	1.43	1.57	3.01	34.98	32.99	4.11	0.51	0.62
		(0.93)	(1.02)	(1.51)	(7.86)	(7.84)	(2.31)	(0.33)	(0.49)
Kenya	2015	1.35	1.31	3.08	38.03	35.43	7.96	0.51	0.35
		(0.72)	(0.63)	(1.76)	(12.49)	(11.43)	(4.01)	(0.34)	(0.48)
Madagascar	2012	1.17	1.16	2.68	36.59	32.91	5.94	0.51	0.24
		(0.47)	(0.45)	(1.52)	(11.40)	(10.60)	(3.40)	(0.36)	(0.42)
Malawi	2016	1.21	1.18	2.65	36.67	34.04	7.24	0.50	0.18
		(0.51)	(0.48)	(1.42)	(12.50)	(11.88)	(3.86)	(0.36)	(0.38)
Mali	2014	1.60	1.77	3.67	39.51	33.85	5.89	0.49	0.43
		(0.88)	(0.92)	(1.90)	(10.10)	(9.71)	(2.69)	(0.31)	(0.49)
Mexico	2018	1.34	1.41	2.02	38.82	37.07	8.72	0.51	0.59
		(0.62)	(0.67)	(1.04)	(11.35)	(9.80)	(4.48)	(0.40)	(0.49)
Mongolia	2016	1.19	1.25	1.90	34.48	33.39	5.33	0.51	0.57
		(0.49)	(0.55)	(0.88)	(8.10)	(7.41)	(3.16)	(0.40)	(0.50)
Morocco	2013	1.61	1.60	2.25	41.20	37.69	8.52	0.51	0.62
		(0.95)	(0.91)	(1.23)	(9.42)	(8.41)	(4.55)	(0.38)	(0.49)
Namibia	2015	1.34	1.42	2.21	38.30	37.13	5.27	0.50	0.42
		(0.66)	(0.69)	(1.31)	(12.54)	(11.92)	(3.09)	(0.40)	(0.49)
Niger	2014	1.22	1.38	3.57	40.84	33.83	6.21	0.50	0.35
		(0.57)	(0.69)	(2.04)	(11.24)	(9.69)	(2.84)	(0.33)	(0.48)
Nigeria	2019	1.36	1.47	3.30	40.07	34.86	7.16	0.51	0.30
		(0.76)	(0.78)	(2.08)	(11.34)	(9.92)	(3.49)	(0.34)	(0.46)
Pakistan	2015	1.67	1.67	3.37	37.30	35.16	8.34	0.52	0.66
		(0.96)	(0.93)	(1.87)	(8.29)	(7.28)	(4.37)	(0.32)	(0.47)
Panama	2008	1.60	1.73	1.76	34.66	33.61	5.63	0.52	1.00
		(0.92)	(0.94)	(1.07)	(11.75)	(9.75)	(3.05)	(0.42)	(0.00)
Paraguay	2011	1.62	1.64	1.94	36.10	34.90	6.62	0.51	0.59
		(0.91)	(0.90)	(1.16)	(11.69)	(11.18)	(3.48)	(0.41)	(0.49)
Rwanda	2016	1.25	1.30	2.73	37.67	35.91	7.68	0.50	0.14
		(0.56)	(0.60)	(1.44)	(11.67)	(10.43)	(4.21)	(0.35)	(0.35)
Senegal	2018	1.61	1.81	3.54	38.72	34.44	6.40	0.49	0.52
		(0.87)	(0.92)	(1.78)	(10.19)	(8.01)	(2.95)	(0.32)	(0.50)
Serbia	2007	1.56	1.70	1.57	41.44	40.04	5.59	0.52	0.55
		(0.70)	(0.71)	(0.62)	(9.40)	(9.36)	(3.41)	(0.43)	(0.50)
Sierra Leona	2011	1.47	1.62	3.00	39.72	35.34	8.44	0.52	0.32
		(0.76)	(0.83)	(1.57)	(11.88)	(10.27)	(3.48)	(0.33)	(0.47)
South Africa	2014	1.42	1.61	1.96	38.28	39.32	6.07	0.50	0.63
		(0.71)	(0.81)	(1.10)	(12.72)	(11.99)	(3.26)	(0.41)	(0.48)
Tajikistan	2009	2.10	2.28	3.03	38.94	37.54	7.18	0.51	0.30
		(1.16)	(1.19)	(1.57)	(8.85)	(7.69)	(3.86)	(0.34)	(0.46)
Tanzania	2014	1.33	1.32	3.00	36.76	33.18	6.45	0.50	0.35
		(0.71)	(0.67)	(1.91)	(10.52)	(9.76)	(3.75)	(0.35)	(0.48)
Timor Leste	2007	1.35	1.33	3.04	37.02	34.12	5.94	0.50	0.44
		(0.72)	(0.63)	(1.55)	(9.26)	(8.94)	(3.19)	(0.33)	(0.50)
Uganda	2015	1.40	1.37	3.30	37.12	35.54	8.48	0.51	0.23
		(0.70)	(0.66)	(1.81)	(11.91)	(11.00)	(3.67)	(0.33)	(0.42)
Uruguay	2016	1.36	1.44	1.52	35.49	33.82	5.59	0.52	0.74
		(0.67)	(0.70)	(0.75)	(10.96)	(8.78)	(3.09)	(0.44)	(0.44)
West Bank and Gaza	2016	1.30	1.26	2.94	36.01	32.34	5.79	0.51	0.57
		(0.73)	(0.63)	(1.43)	(7.53)	(7.60)	(3.55)	(0.34)	(0.50)

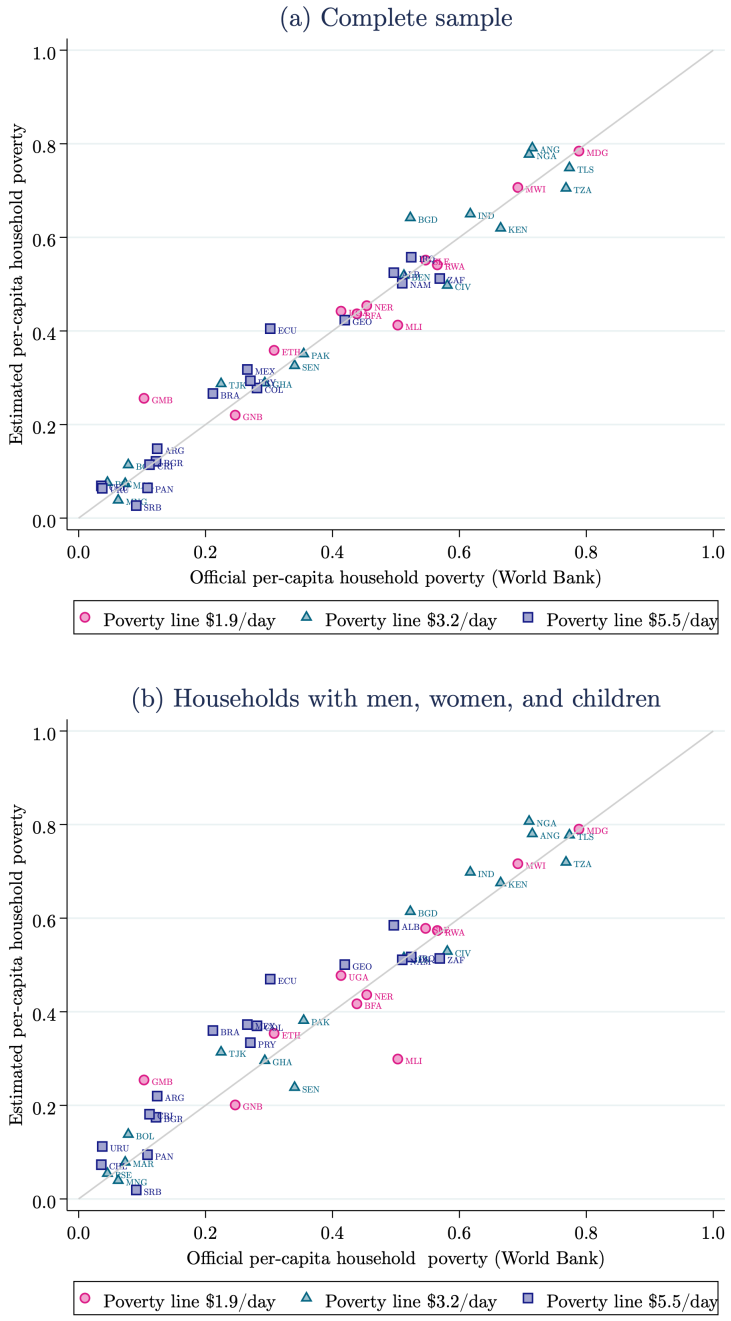
Source: Authors' calculations using the data from household expenditure surveys of each country. *Notes:* Sample of households with men, women, and children. Standard deviations in parentheses.

Table A4: Descriptive Statistics, Expenditure

Country	Year	Annual HH expenditure (2011 PPP$)	Household budget share for clothing			% of zeros in clothing budget shares		
			Men	Women	Children	Men	Women	Children
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Albania	2005	10,250	0.015	0.018	0.022	0.288	0.214	0.100
		(5,995)	(0.016)	(0.020)	(0.019)	(0.453)	(0.410)	(0.301)
Angola	2018	10,746	0.018	0.016	0.033	0.547	0.500	0.327
		(59,717)	(0.035)	(0.029)	(0.050)	(0.498)	(0.500)	(0.469)
Argentina	2018	23,510	0.028	0.024	0.033	0.591	0.589	0.479
		(19,133)	(0.047)	(0.041)	(0.049)	(0.492)	(0.492)	(0.500)
Bangladesh	2015	5,950	0.015	0.013	0.012	0.010	0.095	0.192
		(4,274)	(0.010)	(0.009)	(0.010)	(0.098)	(0.293)	(0.394)
Benin	2018	7,706	0.008	0.008	0.009	0.240	0.164	0.118
		(4,801)	(0.010)	(0.010)	(0.012)	(0.427)	(0.370)	(0.323)
Bolivia	2019	11,229	0.006	0.007	0.014	0.744	0.717	0.565
		(5,774)	(0.012)	(0.013)	(0.020)	(0.436)	(0.451)	(0.496)
Brazil	2017	13,945	0.020	0.018	0.016	0.475	0.515	0.489
		(11,846)	(0.030)	(0.029)	(0.026)	(0.499)	(0.500)	(0.500)
Bulgaria	2007	15,598	0.019	0.022	0.025	0.140	0.111	0.189
		(7,237)	(0.015)	(0.018)	(0.022)	(0.347)	(0.314)	(0.391)
Burkina Faso	2014	7,110	0.013	0.013	0.016	0.368	0.262	0.200
		(3,910)	(0.018)	(0.016)	(0.016)	(0.482)	(0.440)	(0.400)
Chile	2017	31,454	0.009	0.009	0.022	0.535	0.428	0.093
		(24,112)	(0.014)	(0.013)	(0.021)	(0.499)	(0.495)	(0.291)
Colombia	2017	14,293	0.013	0.014	0.016	0.675	0.616	0.528
		(8,302)	(0.025)	(0.025)	(0.026)	(0.468)	(0.486)	(0.499)
Costa Rica	2018	18,290	0.010	0.012	0.024	0.536	0.451	0.206
		(12,081)	(0.016)	(0.019)	(0.028)	(0.499)	(0.498)	(0.405)
Cote d'Ivore	2002	10,719	0.018	0.034	0.029	0.260	0.147	0.079
		(15,259)	(0.019)	(0.029)	(0.024)	(0.439)	(0.354)	(0.270)
Ecuador	2011	14,441	0.032	0.035	0.035	0.077	0.091	0.052
		(10,676)	(0.027)	(0.030)	(0.028)	(0.266)	(0.288)	(0.222)
Ethiopia	2015	3723	0.039	0.032	0.046	0.220	0.201	0.105
		(2,657)	(0.050)	(0.042)	(0.051)	(0.414)	(0.400)	(0.306)
Gambia	2015	7,979	0.010	0.011	0.025	0.334	0.184	0.202
		(5,315)	(0.013)	(0.014)	(0.030)	(0.472)	(0.388)	(0.402)
Georgia	2019	11,695	0.014	0.015	0.042	0.575	0.513	0.279
		(7,663)	(0.025)	(0.022)	(0.045)	(0.494)	(0.500)	(0.449)
Ghana	2017	8,545	0.027	0.022	0.024	0.100	0.061	0.066
		(6,644)	(0.027)	(0.020)	(0.020)	(0.300)	(0.239)	(0.249)
Guinea-Bissau	2018	9,312	0.010	0.008	0.009	0.282	0.258	0.176
		(5,618)	(0.013)	(0.010)	(0.009)	(0.450)	(0.438)	(0.381)
India	2011	6,090	0.019	0.016	0.007	0.105	0.124	0.348
		(3,444)	(0.016)	(0.012)	(0.008)	(0.306)	(0.330)	(0.476)
Iraq	2012	12,959	0.039	0.029	0.032	0.040	0.051	0.044
		(7,242)	(0.029)	(0.024)	(0.024)	(0.195)	(0.221)	(0.205)
Kenya	2015	5,620	0.015	0.018	0.028	0.533	0.427	0.316
		(7,901)	(0.025)	(0.026)	(0.037)	(0.499)	(0.495)	(0.465)
Madagascar	2012	2,729	0.035	0.036	0.058	0.216	0.197	0.143
		(4,394)	(0.051)	(0.048)	(0.075)	(0.411)	(0.398)	(0.351)
Malawi	2016	3,123	0.005	0.009	0.013	0.758	0.548	0.463
		(2,810)	(0.011)	(0.014)	(0.019)	(0.428)	(0.498)	(0.499)
Mali	2014	9,002	0.015	0.016	0.007	0.176	0.131	0.429
		(6,121)	(0.018)	(0.028)	(0.011)	(0.381)	(0.338)	(0.495)
Mexico	2018	14,341	0.012	0.012	0.034	0.596	0.546	0.222
		(12,205)	(0.023)	(0.021)	(0.037)	(0.491)	(0.498)	(0.416)
Mongolia	2016	15,089	0.031	0.037	0.033	0.022	0.009	0.034
		(8,836)	(0.026)	(0.027)	(0.023)	(0.147)	(0.094)	(0.181)
Morocco	2013	16,872	0.011	0.013	0.015	0.517	0.403	0.411
		(10,900)	(0.019)	(0.018)	(0.020)	(0.500)	(0.491)	(0.492)
Namibia	2015	15,048	0.022	0.020	0.028	0.668	0.594	0.472
		(19,378)	(0.051)	(0.040)	(0.048)	(0.471)	(0.491)	(0.499)
Niger	2014	7,538	0.015	0.013	0.019	0.191	0.114	0.100
		(4,614)	(0.018)	(0.016)	(0.020)	(0.393)	(0.318)	(0.301)
Nigeria	2019	5,297	0.009	0.011	0.023	0.412	0.332	0.141
		(5,007)	(0.013)	(0.013)	(0.023)	(0.492)	(0.471)	(0.348)
Pakistan	2015	11,536	0.013	0.011	0.013	0.007	0.015	0.134
		(6,336)	(0.007)	(0.007)	(0.011)	(0.081)	(0.121)	(0.340)
Panama	2008	24,883	0.029	0.024	0.026	0.194	0.172	0.148
		(16,104)	(0.030)	(0.023)	(0.026)	(0.395)	(0.377)	(0.355)
Paraguay	2011	16,728	0.012	0.024	0.014	0.460	0.115	0.405
		(12,248)	(0.019)	(0.023)	(0.020)	(0.498)	(0.319)	(0.491)
Rwanda	2016	4,224	0.011	0.014	0.010	0.125	0.054	0.074
		(3,573)	(0.013)	(0.013)	(0.010)	(0.330)	(0.226)	(0.262)
Senegal	2018	14,044	0.007	0.008	0.009	0.312	0.176	0.139
		(9,818)	(0.011)	(0.011)	(0.011)	(0.464)	(0.381)	(0.346)
Serbia	2007	24,918	0.004	0.004	0.007	0.817	0.713	0.515
		(10,451)	(0.007)	(0.009)	(0.011)	(0.386)	(0.452)	(0.500)
Sierra Leone	2011	4,578	0.014	0.008	0.013	0.158	0.159	0.187
		(3,003)	(0.022)	(0.014)	(0.020)	(0.365)	(0.366)	(0.390)
South Africa	2014	15,869	0.036	0.034	0.055	0.333	0.242	0.122
		(18,972)	(0.045)	(0.038)	(0.052)	(0.471)	(0.429)	(0.327)
Tajikistan	2009	12,487	0.020	0.025	0.020	0.251	0.141	0.174
		(6,461)	(0.023)	(0.029)	(0.027)	(0.434)	(0.348)	(0.379)
Tanzania	2014	5,700	0.016	0.019	0.014	0.143	0.091	0.222
		(3,586)	(0.016)	(0.018)	(0.017)	(0.350)	(0.287)	(0.416)
Timor Leste	2007	5,540	0.018	0.018	0.024	0.293	0.284	0.243
		(4,868)	(0.031)	(0.029)	(0.036)	(0.455)	(0.451)	(0.429)
Uganda	2015	5,824	0.009	0.009	0.011	0.311	0.271	0.180
		(6,403)	(0.010)	(0.010)	(0.010)	(0.463)	(0.445)	(0.384)
Uruguay	2016	21,397	0.016	0.020	0.035	0.396	0.313	0.062
		(14,179)	(0.022)	(0.024)	(0.029)	(0.489)	(0.464)	(0.241)
West Bank and Gaza	2016	20,718	0.013	0.022	0.037	0.674	0.513	0.358
		(10,748)	(0.029)	(0.039)	(0.053)	(0.469)	(0.500)	(0.480)

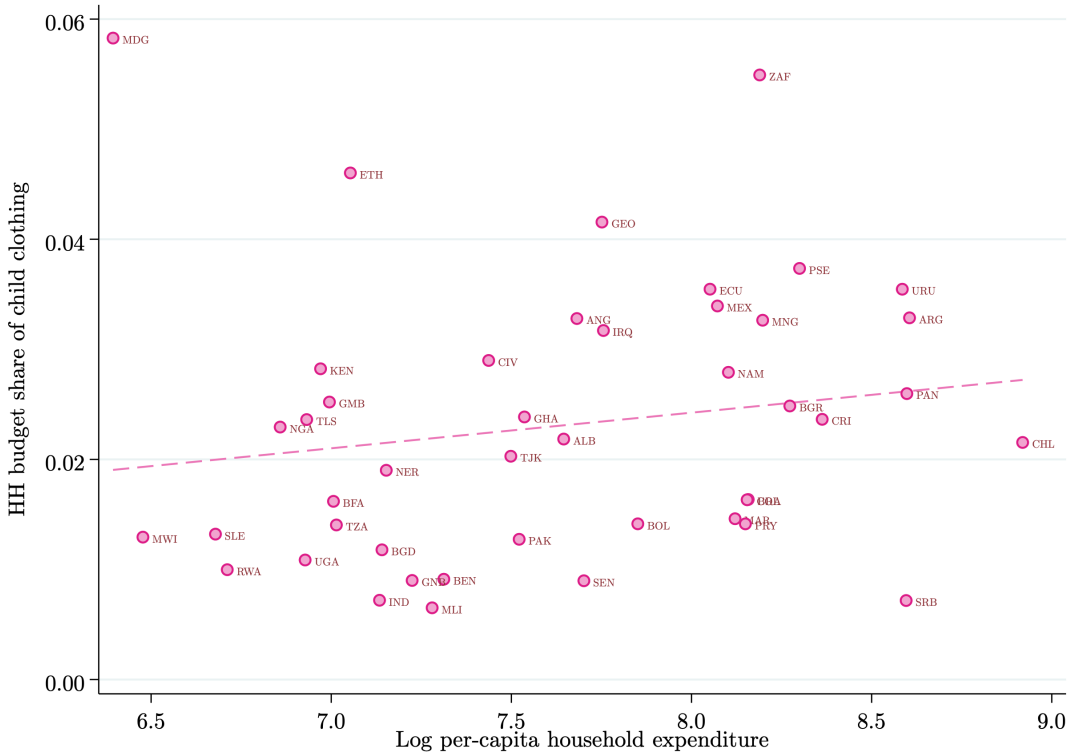
Source: Authors' calculations using the data from household expenditure surveys of each country. *Notes:* Sample of households with men, women, and children. Standard deviations in parentheses.

Figure A1: Official (World Bank) vs. Estimated Per-Capita Household Poverty



Source: World Bank poverty statistics and authors' estimations using the data from household expenditure surveys for 45 countries. *Notes:* Figure compares national per-capita household poverty rates based on the official (World Bank) statistics and own estimations. Results are presented for the poverty line that corresponds to each country according to the World Bank income classification. Graph (a) presents estimated poverty for the complete sample and graph (b) to the selected sample for this study (households with men, women, and children). Differences between the two sources of poverty statistics may arise from the use of different surveys and welfare indicators. For Latin American countries, World Bank poverty estimates are based on household income, not expenditure. Panama´s official poverty refers to all the country but the expenditure survey used is only urban. We applied a correction factor to the official poverty to reflect urban poverty based on the urban/total ratio published for 2021. Ethiopia's expenditure was adjusted to reflect official poverty.

Figure A2: Household Budget Shares for Child Clothing



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates country-level average household budget shares for child clothing by log per-capita household expenditure, with a fitted line. Average values are calculated for the sample of households with men, women, and children.

3 Detailed Estimates of the Resource Share Functions

We discuss here the estimation of the resource share function. Among the determinants z^r of this function, we distinguish two main categories. The first one pertains to the demographic structure s, and in particular the number of children in the household. The number of each person type enters in multiple places in the model, i.e., in the sharing function and as a deflator of resource shares for all persons of a given type (cf. equation 2). Thus, we simply assess the impact of family size by computing resource shares for the first, second and third child. Results are presented in the Appendix 6 (Figure A4 reports this overall effect of the demographic structure).

The second category of sharing rule determinants includes other covariates in z^r, namely the average age of each person types, the proportion of boys, and urban residence. The marginal effects of these variables on per-child and per-woman resource shares are reported in Tables A5 and A6, respectively. The results are in line with, and generalize, findings from related studies, for instance Dunbar et al. (2013) and Penglase (2021) for Malawi, Bargain et al. (2015) for Ivory Coast or Brown et al. (2021) and Bargain et al. (2022) for Bangladesh. In particular, we find no systematic evidence of gender gaps between siblings. Nonetheless, a significantly positive association between child shares and the proportion of boys is observed in 11 countries, while the opposite pattern appears in 4 countries. In particular, gender disparities among children are relatively limited in Africa: a significant pro-boy advantage is detected in only 4 of the 21 African countries in our sample (Burkina Faso, Gambia, Kenya, and Senegal). This limited gender bias aligns with previous findings (Haddad and Hoddinott, 1994; Bargain et al., 2015) and has been attributed by Deaton (1997) to the relatively high economic participation of women in many African countries, where girls are not perceived as a financial burden. We also find that children in urban households tend to receive slightly more resources, though the effect is not particularly strong. Urban residence is significantly associated with larger child shares in 10 countries, while the opposite pattern appears in 5 countries. In most countries, older women relative to men in the household receive fewer resources, though this age pattern may not be strictly linear.[27] In 14 countries, women receive fewer resources when children in the household are predominantly boys–a pattern that aligns with significantly larger child shares in one-third of these cases.

[27] In Southern Asia, there is evidence that women's health status deteriorates with age (Anderson and Ray, 2010; Calvi, 2020). In contrast, opposite patterns are observed in several African countries (Aminjonov et al., 2024), where younger women may experience disadvantages due to early marriage and lower empowerment (Cameron et al., 2023).

Table A5: Marginal Effects on Per-Child Resource Shares

Country	Year	Per-child resource shares				
		Average age of children	Average adult age	Age difference between women and men	Proportion of boys	Urban
		(1)	(2)	(3)	(4)	(5)
Albania	2005	0.018***	-0.001	0.007***	0.004*	0.011**
		(0.005)	(0.002)	(0.002)	(0.003)	(0.005)
Angola	2018	-0.043***	0.007***	0.003	0.000*	-0.008
		(0.007)	(0.002)	(0.002)	(0.004)	(0.008)
Argentina	2018	-0.036***	-0.004	0.004	0.009	-
		(0.010)	(0.004)	(0.004)	(0.006)	-
Bangladesh	2015	-0.077***	-0.004	0.007*	0.040***	-0.061*
		(0.009)	(0.004)	(0.004)	(0.007)	(0.032)
Benin	2018	-0.018***	-0.005***	-0.004***	-0.003	-0.003
		(0.004)	(0.001)	(0.001)	(0.002)	(0.005)
Bolivia	2019	-0.024***	-0.004**	0.000	-0.002	-0.019***
		(0.005)	(0.002)	(0.002)	(0.003)	(0.006)
Brazil	2017	-0.038***	0.003*	-0.011***	-0.006**	-0.004
		(0.003)	(0.002)	(0.002)	(0.003)	(0.007)
Bulgaria	2007	-0.035***	0.001	0.003	-0.005*	0.009
		(0.008)	(0.002)	(0.002)	(0.003)	(0.007)
Burkina Faso	2014	0.000	0.002***	-0.001	0.003**	-0.002
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Chile	2017	-0.004	-0.003	0.010**	0.020***	-
		(0.007)	(0.005)	(0.005)	(0.007)	-
Colombia	2017	-0.020***	-0.001**	0.000	-0.001	-0.004
		(0.002)	(0.001)	(0.001)	(0.001)	(0.004)
Costa Rica	2018	-0.052***	0.016***	0.009	-0.002	-0.034
		(0.015)	(0.006)	(0.006)	(0.008)	(0.021)
Cote d'Ivore	2002	0.002*	0.003***	-0.003***	-0.001	0.009***
		(0.001)	(0.000)	(0.000)	(0.001)	(0.002)
Ecuador	2011	0.008***	0.004***	-0.008***	-0.002**	0.000
		(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Ethiopia	2015	0.038***	0.011***	0.001	0.001	-0.006
		(0.005)	(0.002)	(0.002)	(0.005)	(0.011)
Gambia	2015	0.001	0.002	0.003	-0.004	0.022
		(0.007)	(0.003)	(0.003)	(0.005)	(0.019)
Georgia	2019	0.004***	0.003***	0.001**	0.006***	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Ghana	2017	-0.003	0.005***	-0.000	0.001	-0.002
		(0.002)	(0.001)	(0.001)	(0.002)	(0.004)
Guinea-Bissau	2018	-0.006**	0.004***	-0.002	0.002	-0.018**
		(0.003)	(0.001)	(0.001)	(0.002)	(0.099)
India	2011	0.025***	0.004***	0.000	0.003**	0.003
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Iraq	2012	0.009***	0.000	-0.002***	0.001	0.003**
		(0.001)	(0.000)	(0.000)	(0.001)	(0.002)
Kenya	2015	0.006***	0.001*	0.002**	0.004**	0.001
		(0.002)	(0.001)	(0.001)	(0.002)	(0.003)
Madagascar	2012	0.016***	-0.001	-0.001	0.004	0.007
		(0.004)	(0.002)	(0.002)	(0.003)	(0.007)
Malawi	2016	-0.006*	0.000	0.001	0.000	0.013*
		(0.003)	(0.001)	(0.001)	(0.003)	(0.008)
Mali	2014	0.009**	-0.003*	0.000	-0.002	0.004
		(0.005)	(0.002)	(0.002)	(0.003)	(0.007)
Mexico	2018	0.006***	0.005***	0.004***	0.000	0.003
		(0.001)	(0.001)	(0.001)	(0.001)	(0.004)
Mongolia	2016	0.003**	0.003***	-0.003***	-0.001	-0.022***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Morocco	2013	0.009**	0.000	-0.001	0.002	0.004
		(0.004)	(0.001)	(0.001)	(0.002)	(0.003)
Namibia	2015	-0.020***	-0.003**	0.001	0.000	0.008**
		(0.007)	(0.001)	(0.001)	(0.003)	(0.004)
Niger	2014	0.008	0.001	-0.003*	0.002	-0.014*
		(0.005)	(0.002)	(0.002)	(0.003)	(0.008)
Nigeria	2019	-0.004*	-0.001	0.000	0.002	0.008**
		(0.002)	(0.001)	(0.001)	(0.003)	(0.003)
Pakistan	2015	0.000	0.002***	-0.003***	-0.006***	0.006***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Panama	2008	-0.086***	0.003	-0.004*	0.006*	-
		(0.009)	(0.002)	(0.002)	(0.003)	-
Paraguay	2011	-0.060***	0.000	-0.002	0.010***	0.005
		(0.007)	(0.001)	(0.001)	(0.003)	(0.005)
Rwanda	2016	-0.015***	0.000	0.000	0.001	0.023***
		(0.002)	(0.001)	(0.001)	(0.002)	(0.006)
Senegal	2018	-0.013***	0.006***	-0.001	0.006*	0.008
		(0.004)	(0.002)	(0.002)	(0.003)	(0.006)
Serbia	2007	-0.045***	0.007	0.003	-0.004	0.003
		(0.015)	(0.005)	(0.005)	(0.006)	(0.010)
Sierra Leone	2011	0.007***	0.000	0.002**	-0.002	0.037***
		(0.002)	(0.001)	(0.001)	(0.003)	(0.005)
South Africa	2014	0.004	-0.003	-0.002	0.002	-0.001
		(0.006)	(0.002)	(0.002)	(0.004)	(0.008)
Tajikistan	2009	-0.004	0.005	-0.003	0.013	0.010
		(0.004)	(0.003)	(0.003)	(0.004)	(0.008)
Tanzania	2014	-0.017***	0.002*	-0.004***	0.003	-0.007
		(0.004)	(0.001)	(0.001)	(0.003)	(0.006)
Timor Leste	2007	-0.040***	0.003	0.002	0.003	0.009
		(0.008)	(0.003)	(0.003)	(0.004)	(0.008)
Uganda	2015	0.011***	-0.003**	-0.003**	-0.004	0.007
		(0.003)	(0.001)	(0.001)	(0.003)	(0.008)
Uruguay	2016	0.024*	-0.024***	0.000	0.011	0.006
		(0.013)	(0.006)	(0.006)	(0.008)	(0.021)
West Bank and Gaza	2016	0.006	0.002	-0.003	0.007	0.016*
		(0.011)	(0.006)	(0.006)	(0.008)	(0.010)

Source: Authors' estimations using the data from household expenditure surveys for 45 countries. *Notes:* Table reports the marginal effects of selected variables on per-child resource shares. Sample of households with men, women, and children. Standard errors in parentheses. *, **, *** indicate 10%, 5% and 1% significance level.

Table A6: Marginal effects on Per-Woman Resource Shares

Country	Year	Per-woman resource shares				
		Average age of children	Average adult age	Age difference between women and men	Proportion of boys	Urban
		(1)	(2)	(3)	(4)	(5)
Albania	2005	0.008	-0.001	-0.023***	0.001	-0.014
		(0.007)	(0.003)	(0.003)	(0.006)	(0.019)
Angola	2018	0.048***	-0.005	-0.019***	0.010	-0.001
		(0.015)	(0.006)	(0.006)	(0.010)	(0.016)
Argentina	2018	0.012	0.008***	-0.025***	-0.019**	-
		(0.010)	(0.003)	(0.003)	(0.008)	-
Bangladesh	2015	-0.011	0.024***	0.013***	0.026***	-0.044
		(0.006)	(0.002)	(0.002)	(0.005)	(0.012)
Benin	2018	0.032***	-0.002	-0.014***	-0.008	-0.005
		(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Bolivia	2007	0.010*	-0.001	-0.011***	0.003	0.020
		(0.006)	(0.002)	(0.002)	(0.005)	(0.012)
Brazil	2014	0.018***	-0.002	0.032***	0.014***	-0.002
		(0.004)	(0.002)	(0.002)	(0.003)	(0.007)
Bulgaria	2017	0.028***	-0.002	-0.035***	-0.017***	-0.001
		(0.006)	(0.003)	(0.003)	(0.005)	(0.016)
Burkina Faso	2019	0.006	0.001	-0.015***	0.001	-0.019**
		(0.006)	(0.003)	(0.003)	(0.006)	(0.008)
Chile	2017	-0.017*	0.000	-0.019***	-0.025**	-
		(0.009)	(0.004)	(0.004)	(0.010)	-
Colombia	2018	0.013***	-0.002**	-0.019***	-0.004*	-0.006
		(0.003)	(0.001)	(0.001)	(0.002)	(0.010)
Costa Rica	2002	0.038***	-0.005	-0.031***	-0.016*	0.005
		(0.013)	(0.005)	(0.005)	(0.010)	(0.025)
Cote d'Ivore	2017	-0.004	0.003*	-0.002	0.000	-0.006
		(0.003)	(0.002)	(0.002)	(0.003)	(0.005)
Ecuador	2011	-0.009***	-0.001*	0.029***	0.001	-0.004
		(0.002)	(0.001)	(0.001)	(0.001)	(0.003)
Ethiopia	2015	-0.039***	-0.009	-0.043***	-0.009	-0.043**
		(0.011)	(0.007)	(0.007)	(0.011)	(0.019)
Gambia	2015	0.008**	0.003*	-0.007***	-0.011***	0.011*
		(0.003)	(0.002)	(0.002)	(0.004)	(0.006)
Georgia	2019	-0.001	0.003	-0.050***	0.003	-0.036*
		(0.014)	(0.004)	(0.004)	(0.012)	(0.021)
Ghana	2017	-0.001	-0.004**	-0.010***	-0.001	-0.000
		(0.004)	(0.002)	(0.002)	(0.003)	(0.006)
Guinea-Bissau	2018	0.021***	0.001	-0.018***	-0.009	0.022
		(0.006)	(0.003)	(0.003)	(0.006)	(0.015)
India	2011	-0.007***	-0.008***	-0.006***	-0.013***	0.001
		(0.002)	(0.001)	(0.001)	(0.002)	(0.004)
Iraq	2017	-0.001	0.001	-0.020***	-0.001	0.003
		(0.003)	(0.001)	(0.001)	(0.002)	(0.005)
Kenya	2012	-0.007**	-0.001	-0.006***	-0.005	-0.003
		(0.004)	(0.002)	(0.002)	(0.004)	(0.007)
Madagascar	2012	-0.010	-0.005	-0.009***	-0.006	-0.001
		(0.007)	(0.003)	(0.003)	(0.005)	(0.023)
Malawi	2018	0.007	-0.002	-0.005*	0.000	-0.038***
		(0.006)	(0.003)	(0.003)	(0.006)	(0.014)
Mali	2016	0.008	0.001	-0.010**	0.007	-0.049
		(0.012)	(0.005)	(0.005)	(0.010)	(0.034)
Mexico	2015	-0.004*	-0.007***	-0.043***	-0.002	0.001
		(0.002)	(0.001)	(0.001)	(0.003)	(0.006)
Mongolia	2014	0.003	-0.005**	-0.031***	-0.007**	-0.031***
		(0.004)	(0.002)	(0.002)	(0.003)	(0.008)
Morocco	2013	-0.010	0.001	-0.016**	0.015**	-0.032***
		(0.009)	(0.007)	(0.007)	(0.011)	(0.010)
Namibia	2016	0.012	0.012**	0.003	0.005	-0.034*
		(0.015)	(0.005)	(0.005)	(0.012)	(0.018)
Niger	2015	0.008	0.003	-0.027***	-0.023**	0.097***
		(0.016)	(0.007)	(0.007)	(0.012)	(0.037)
Nigeria	2014	0.007	0.003	0.001	-0.001	-0.020*
		(0.005)	(0.003)	(0.003)	(0.006)	(0.011)
Pakistan	2015	-0.002	-0.005***	-0.004***	-0.019***	0.008
		(0.001)	(0.001)	(0.001)	(0.005)	(0.005)
Panama	2019	0.064***	0.007***	-0.023***	-0.011**	-
		(0.007)	(0.002)	(0.002)	(0.005)	-
Paraguay	2008	0.061***	-0.004*	0.020***	-0.005	-0.007
		(0.006)	(0.003)	(0.003)	(0.005)	(0.008)
Rwanda	2011	0.021***	0.001	-0.018***	-0.013***	-0.039***
		(0.004)	(0.002)	(0.002)	(0.004)	(0.012)
Senegal	2018	0.020**	0.002	-0.016***	-0.018**	-0.013
		(0.009)	(0.004)	(0.004)	(0.008)	(0.011)
Serbia	2007	0.025	-0.015***	-0.040***	0.007	0.056***
		(0.017)	(0.005)	(0.005)	(0.013)	(0.019)
Sierra Leone	2016	0.012*	0.005**	0.004**	-0.011	-0.043***
		(0.007)	(0.002)	(0.002)	(0.011)	(0.014)
South Africa	2015	0.015**	0.003	-0.025***	0.007	0.029*
		(0.006)	(0.002)	(0.002)	(0.005)	(0.015)
Tajikistan	2011	0.010	-0.001	-0.010***	-0.011	0.015
		(0.006)	(0.004)	(0.004)	(0.007)	(0.017)
Tanzania	2009	0.053***	0.003	-0.008**	-0.047***	0.005
		(0.008)	(0.004)	(0.004)	(0.007)	(0.014)
Timor Leste	2014	0.050***	-0.006	-0.022***	-0.027***	0.006
		(0.012)	(0.005)	(0.005)	(0.010)	(0.021)
Uganda	2014	0.002	0.004	0.004	-0.003	0.002
		(0.009)	(0.004)	(0.004)	(0.008)	(0.015)
Uruguay	2007	-0.018	0.013***	-0.024***	0.000	-0.009
		(0.011)	(0.004)	(0.004)	(0.009)	(0.022)
West Bank and Gaza	2016	-0.045*	-0.029**	-0.051***	-0.027	-0.026
		(0.027)	(0.013)	(0.013)	(0.024)	(0.034)

Source: Authors' estimations using the data from household expenditure surveys for 45 countries. *Notes:* Table reports the marginal effects of selected variables on per-woman resource shares. Sample of households with men, women, and children. Standard errors in parentheses. *, **, *** indicate 10%, 5% and 1% significance level.

4 Pattern of Intra-Household Inequality: Estimates, Literature and Checks

We present here our estimates of resource shares, calculated as $\exp(\widetilde{\gamma}_i \overline{z}^r)/(1+\exp(\widetilde{\gamma}_f \overline{z}^r)+\exp(\widetilde{\gamma}_c \overline{z}^r))$ for $i = f, c$. In the baseline, shares are computed at sample means $\overline{z}^r$ in order to derive confidence intervals.

- Table A7: Baseline results where resource shares are computed at sample means
- Table A8: We present a review of country-specific resource share estimations
- Figure A3: Individual resource shares by living standards (here as a robustness check where resource shares are predicted for each household and averaged for each country)
- Figure A4: Child resource shares by number of children in the household
- Figure A5: Family size by living standards

Table A7: Estimates of Per-Person Resource Shares (Calculated at Sample Mean)

Country	Year	% of households with non-flat Engel curve	Resource shares at mean			Gender gap at mean
			Per man	Per woman	Per child	
		(1)	(2)	(3)	(4)	(5)
Albania	2005	0.90	0.297	0.292	0.043	0.005
			(0.020)	(0.025)	(0.012)	(0.043)
Angola	2018	1.00	0.346	0.267	0.101	0.079**
			(0.022)	(0.029)	(0.013)	(0.040)
Argentina	2018	1.00	0.240	0.226	0.150	0.014
			(0.016)	(0.021)	(0.025)	(0.029)
Bangladesh	2015	0.96	0.293	0.263	0.122	0.030
			(0.023)	(0.030)	(0.012)	(0.051)
Benin	2018	0.98	0.422	0.256	0.058	0.166***
			(0.026)	(0.023)	(0.006)	(0.046)
Bolivia	2019	1.00	0.346	0.250	0.087	0.096***
			(0.012)	(0.014)	(0.010)	(0.022)
Brazil	2017	1.00	0.349	0.237	0.127	0.112***
			(0.010)	(0.010)	(0.009)	(0.017)
Bulgaria	2007	1.00	0.314	0.335	0.055	-0.021
			(0.011)	(0.013)	(0.011)	(0.021)
Burkina Faso	2014	1.00	0.341	0.196	0.031	0.146***
			(0.023)	(0.019)	(0.006)	(0.040)
Chile	2017	0.91	0.209	0.225	0.228	-0.015
			(0.015)	(0.018)	(0.017)	(0.027)
Colombia	2017	1.00	0.351	0.237	0.059	0.114***
			(0.005)	(0.006)	(0.005)	(0.011)
Costa Rica	2018	0.87	0.233	0.276	0.148	-0.042
			(0.034)	(0.035)	(0.034)	(0.058)
Cote d'Ivore	2002	1.00	0.298	0.210	0.053	0.088***
			(0.010)	(0.009)	(0.003)	(0.017)
Ecuador	2011	0.99	0.351	0.177	0.094	0.174***
			(0.005)	(0.004)	(0.004)	(0.008)
Ethiopia	2015	0.78	0.268	0.254	0.099	0.014
			(0.023)	(0.021)	(0.010)	(0.038)
Gambia	2015	0.90	0.249	0.195	0.036	0.054***
			(0.011)	(0.010)	(0.003)	(0.019)
Georgia	2019	0.87	0.303	0.183	0.097	0.120***
			(0.026)	(0.027)	(0.026)	(0.046)
Ghana	2017	1.00	0.383	0.225	0.094	0.159***
			(0.016)	(0.015)	(0.008)	(0.027)
Guinea-Bissau	2018	0.93	0.256	0.189	0.036	0.067
			(0.025)	(0.026)	(0.013)	(0.045)
India	2011	0.97	0.283	0.242	0.097	0.040***
			(0.005)	(0.006)	(0.004)	(0.011)
Iraq	2012	1.00	0.356	0.249	0.033	0.106***
			(0.010)	(0.011)	(0.003)	(0.021)
Kenya	2015	1.00	0.309	0.239	0.088	0.070***
			(0.010)	(0.012)	(0.005)	(0.018)
Madagascar	2012	0.99	0.315	0.288	0.111	0.027
			(0.030)	(0.028)	(0.013)	(0.050)
Malawi	2016	1.00	0.304	0.268	0.120	0.036*
			(0.012)	(0.016)	(0.009)	(0.020)
Mali	2014	0.80	0.272	0.241	0.038	0.031
			(0.046)	(0.042)	(0.012)	(0.084)
Mexico	2018	1.00	0.241	0.309	0.119	-0.068***
			(0.007)	(0.007)	(0.005)	(0.011)
Mongolia	2016	1.00	0.461	0.294	0.043	0.167***
			(0.014)	(0.014)	(0.006)	(0.027)
Morocco	2013	1.00	0.294	0.283	0.033	0.011
			(0.025)	(0.023)	(0.011)	(0.045)
Namibia	2015	1.00	0.346	0.311	0.044	0.035
			(0.027)	(0.030)	(0.013)	(0.053)
Niger	2014	0.80	0.368	0.244	0.060	0.125
			(0.081)	(0.063)	(0.018)	(0.135)
Nigeria	2019	0.98	0.329	0.264	0.050	0.065**
			(0.014)	(0.015)	(0.005)	(0.026)
Pakistan	2015	1.00	0.289	0.197	0.056	0.091***
			(0.008)	(0.008)	(0.004)	(0.014)
Panama	2008	1.00	0.203	0.266	0.124	-0.063***
			(0.010)	(0.014)	(0.015)	(0.019)
Paraguay	2011	1.00	0.298	0.249	0.056	0.049*
			(0.012)	(0.015)	(0.007)	(0.026)
Rwanda	2016	1.00	0.324	0.279	0.085	0.045*
			(0.016)	(0.015)	(0.008)	(0.026)
Senegal	2018	1.00	0.276	0.191	0.059	0.084**
			(0.020)	(0.019)	(0.009)	(0.033)
Serbia	2007	1.00	0.283	0.281	0.053	0.002
			(0.030)	(0.029)	(0.020)	(0.055)
Sierra Leona	2011	1.00	0.256	0.250	0.073	0.006
			(0.021)	(0.017)	(0.006)	(0.036)
South Africa	2014	0.86	0.305	0.197	0.128	0.108***
			(0.017)	(0.014)	(0.011)	(0.027)
Tajikistan	2009	1.00	0.209	0.174	0.055	0.035
			(0.028)	(0.037)	(0.019)	(0.061)
Tanzania	2014	0.97	0.406	0.249	0.044	0.157***
			(0.023)	(0.022)	(0.007)	(0.043)
Timor Leste	2007	0.79	0.322	0.279	0.065	0.043
			(0.039)	(0.043)	(0.011)	(0.079)
Uganda	2015	0.90	0.308	0.257	0.066	0.051
			(0.027)	(0.030)	(0.011)	(0.051)
Uruguay	2016	0.81	0.265	0.210	0.221	0.055
			(0.026)	(0.028)	(0.034)	(0.041)
West Bank and Gaza	2016	0.78	0.289	0.279	0.093	0.010
			(0.047)	(0.043)	(0.021)	(0.078)
# countries with significantly positive gender gaps						23
# countries with significantly negative gender gaps						2
International means			0.306	0.246	0.083	0.060

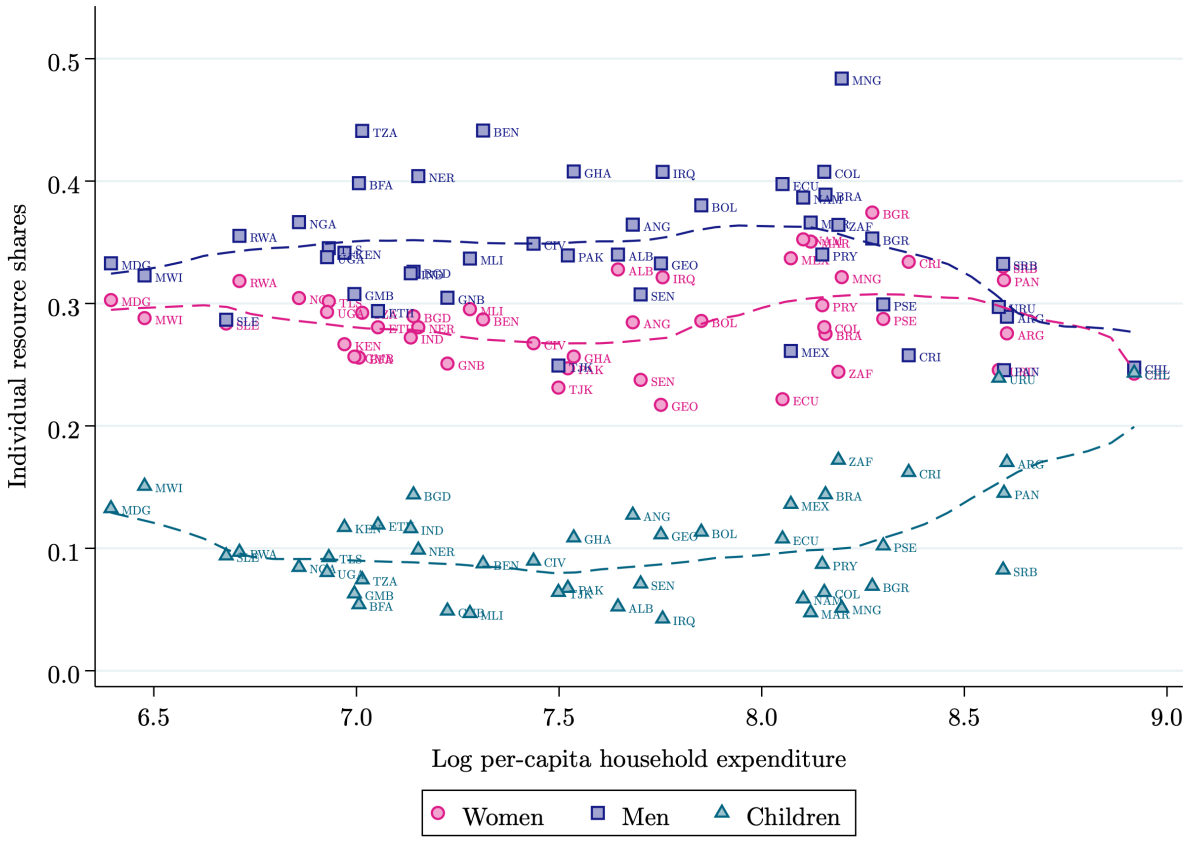
Source: Authors' estimations using the data from household expenditure surveys for 45 countries. *Notes:* Table reports the per-man, per-woman, per-child resource shares and gender gap in resource shares predicted using *country-level mean household characteristics*. Mean household characteristics are based on the sample of households with men, women and children. Per-person shares do not add up to one due to the different number of members of each demographic group within households. International means are the arithmetic mean of country shares/gaps. Standard errors in parentheses. *, **, *** indicate 10%, 5% and 1% significance level.

Table A8: A Review of Country-Specific Resource Share Estimations

Country	Sample	Per-woman resource shares		Per-child resource shares		Authors
		households with children, women and men	households with women and men	Mean across household compositions	Range across household compositions	
Albania	Complex households	0.26	0.29	0.13	-	Bose-Duker et al. (2021)
Albania	Couples with one child	0.26		0.39	-	Mangiavacchi et al. (2018)
Albania	Couples with children	0.28		0.39	-	Betti et al. (2020)
Argentina	Household with men and women	0.23-0.26	0.29	0.12	0.07-0.14	Bargain (2023)
Argentina	Couples with children and single parents	-	-	-	0.22-0.61	Echeverría et al. (2019)
Bangladesh	Complex households	0.25	-	-	0.15-0.16	Brown et al. (2021)
Bangladesh	Complex households	0.27	-	0.13	-	Calvi et al. (2023)
Bangladesh	Complex households	0.28	-	-	0.15-0.24	Bargain et al. (2022)
Bangladesh	Complex households	0.29	-	-	0.14	Bose-Duker et al. (2021)
Brazil	Couples with/without children	0.34- 0.41	0.47	-	0.10-0.23	Gómez and Coelho (2017)
Brazil	Singles and couples with/without children	0.32-0.39	0.47	-	0.11-0.20	Iglesias and Coelho (2020)
Bulgaria	Complex households	0.39	0.45	0.17	-	Bose-Duker et al. (2021)
Côte d'Ivoire	Singles and couples with/without children	0.38-0.42	0.52	-	0.09-0.19	Bargain et al. (2015)
Ethiopia	Couples with children and single mothers	-	-	0.19	0.15-0.32	Belete et al. (2019)
Ghana	Complex households	0.24-0.28	0.31	0.07	0.06-0.08	Aminjonov et al. (2024)
Iraq	Complex households	0.21	0.26	0.05	-	Bose-Duker et al. (2021)
India(*)	Complex households	0.32	-	0.18	-	Calvi (2020)
Malawi	Couples with children	0.30	-	0.10	0.07-0.14	Dunbar et al. (2013)
Malawi	Complex households	0.29	-	0.12	0.11-0.14	Penglase (2021)
Malawi	Complex households	0.27	0.28	0.13	0.07-0.15	Bose-Duker et al. (2021)
Malawi	Complex households	0.28	0.37	0.15	0.14-0.16	Aminjonov et al. (2024)
Mexico	Poor nuclear households (PROGRESA)	0.31-0.38	-	-	0.09-0.32	?
Mexico	Poor nuclear households (PROGRESA)	0.34-0.37	-	-	0.07-0.12	Sokullu and Valente (2022)
Mexico	Poor nuclear households (PROGRESA)	0.29-0.31	-	-	0.11-0.28	Tommasi (2019)
Mexico	Complex households	0.34	-	0.16	-	Calvi et al. (2023)
Russia	Couples without children, both employed	-	0.345-0.618	-	-	Cherchye et al. (2011)
South Africa	Couples with children	0.28-0.36	0.45	-	0.12-0.20	Bargain et al. (2018)
South Africa	Household with men and women	0.18-0.29	0.29	0.18	0.10-0.24	Bargain (2023)

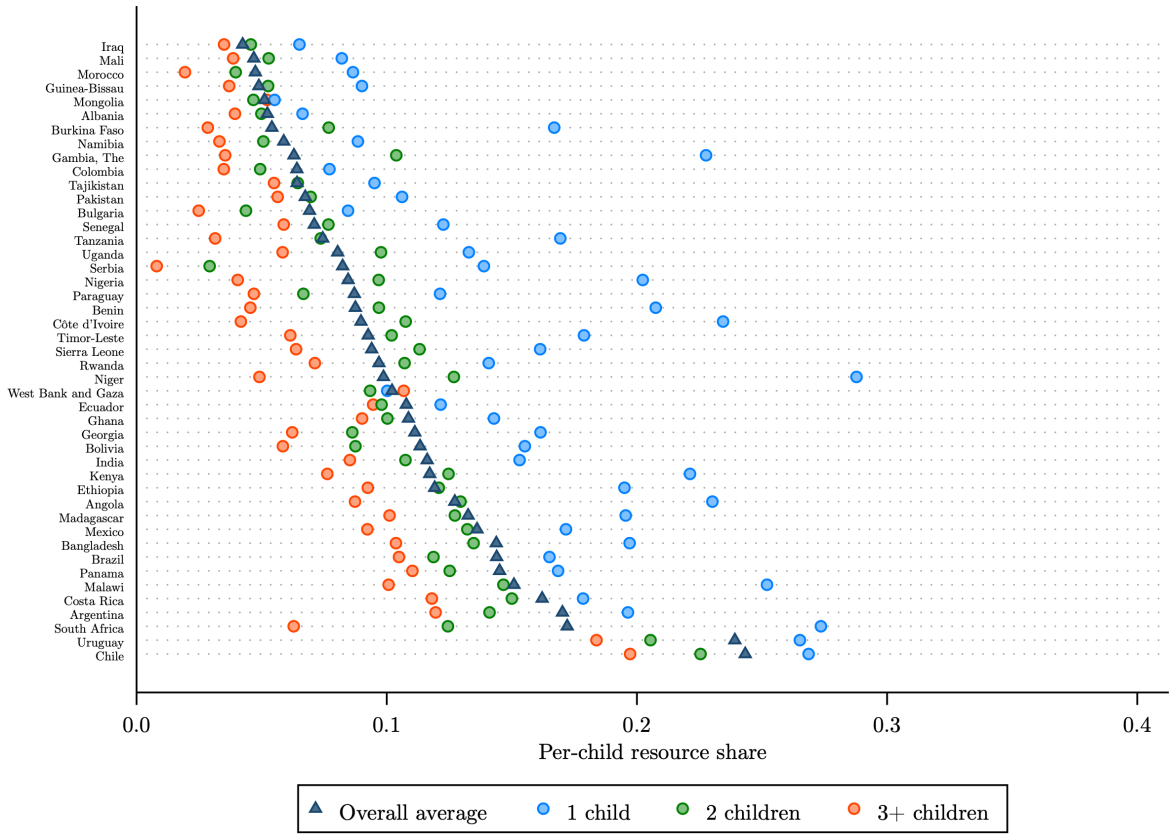
Notes: (*) Results from Calvi (2020) refer to shares of all women and all children in the household.

Figure A3: Individual Resource Shares by Living Standards
(Robustness Check Based on Within-Country Mean Resource Shares)



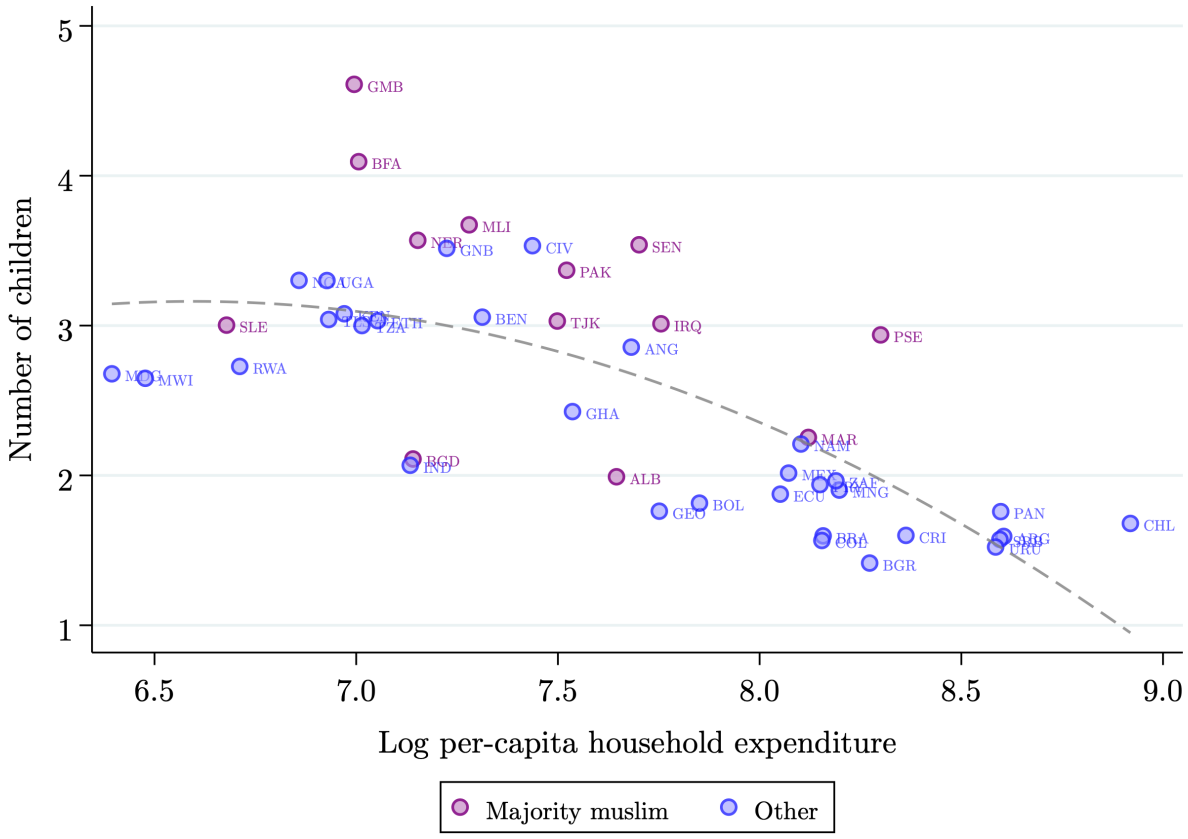
Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates country-level average of predicted per-man, per-woman, and per-child resource shares by log per-capita household expenditure. Country-level averages of resource shares and log per-capita household expenditure are based on the sample of households with men, women and children. Per-person shares do not add up to one due to the different number of members of each demographic group within households. Smooth lines are based on locally weighted regressions of resource shares on log household expenditure.

Figure A4: Child Resource Shares by Number of Children



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates country-level average of predicted per-child resource shares for all households, households with one child, two children, and three or more children. Country-level averages of resource shares are based on the sample of households with men, women and children.

Figure A5: Average Number of Children by Living Standards



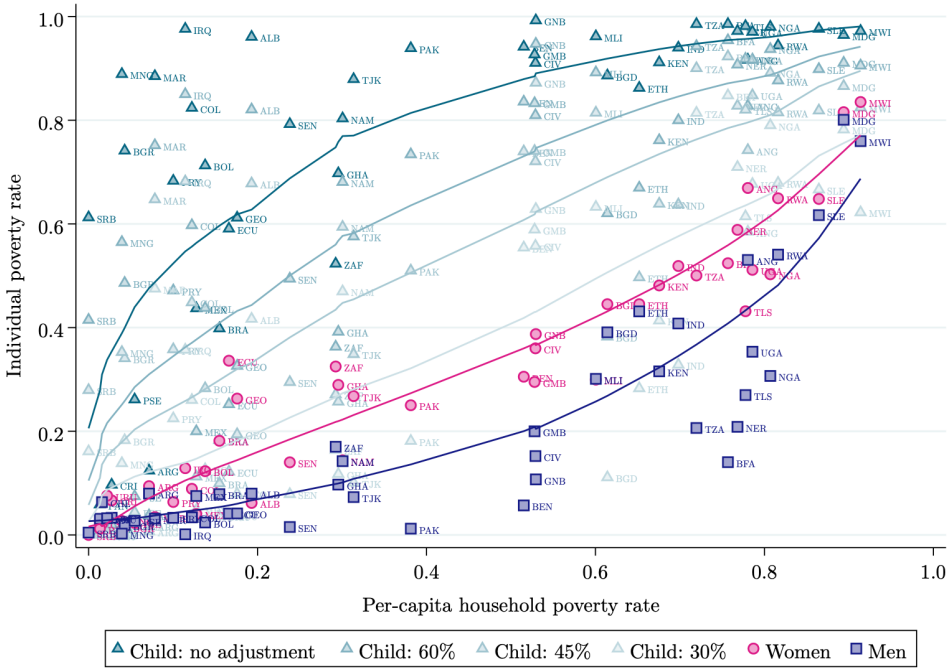
Source: Authors' estimations using the data from household expenditure surveys for 45 countries. *Notes:* Figure illustrates the country-level average number of children in households with children, women, and men, by log per-capita household expenditure. Smooth line is based on quadratic regressions of the number of children on log per-capita household expenditure. Majority Muslim indicates if the share of Muslim households in a country is equal to or above 50%.

5 Implication for Individual Poverty: Checks and Additional Results

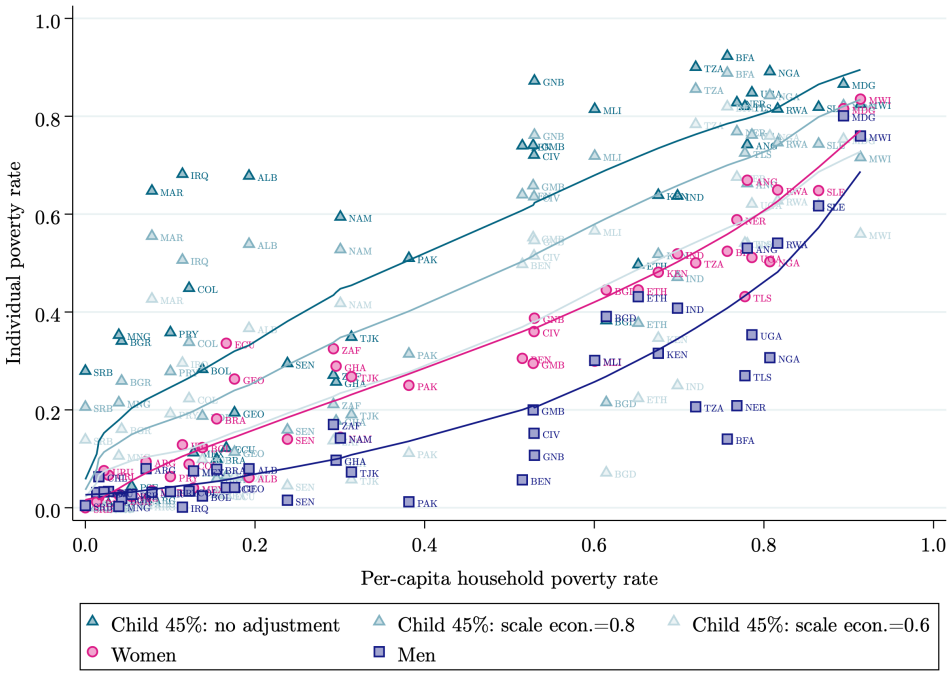
- Figure A6: Individual versus per-capita household poverty (at $3.2/day) with country-level markers
- Figure A7: Individual versus per-capita household poverty using alternative poverty line (at $1.9/day)
- Figure A8: Child-Woman Poverty Gap at Varying Levels of Scale Economies among Children
- Figure A9: Proportion of poor individuals in non-poor households (i.e. in households deemed non-poor according to the per-capita approach)

Figure A6: Individual versus Per-Capita Household Poverty (Poverty Line at $3.2/day, 2011 PPP)

(a) Variation in equivalence scales for children



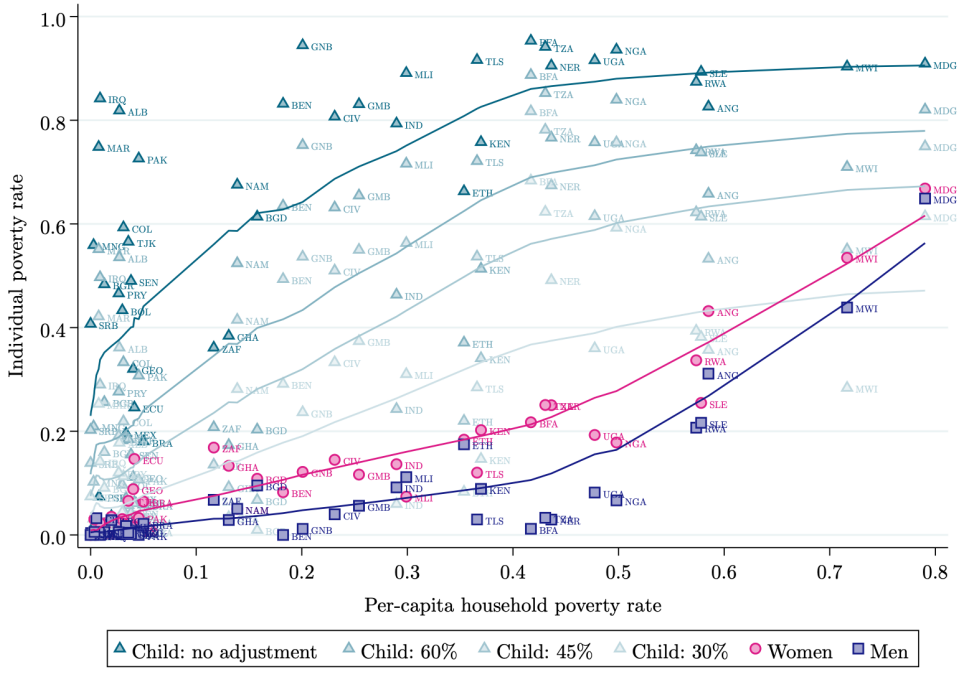
(b) Variation in scale economies among children



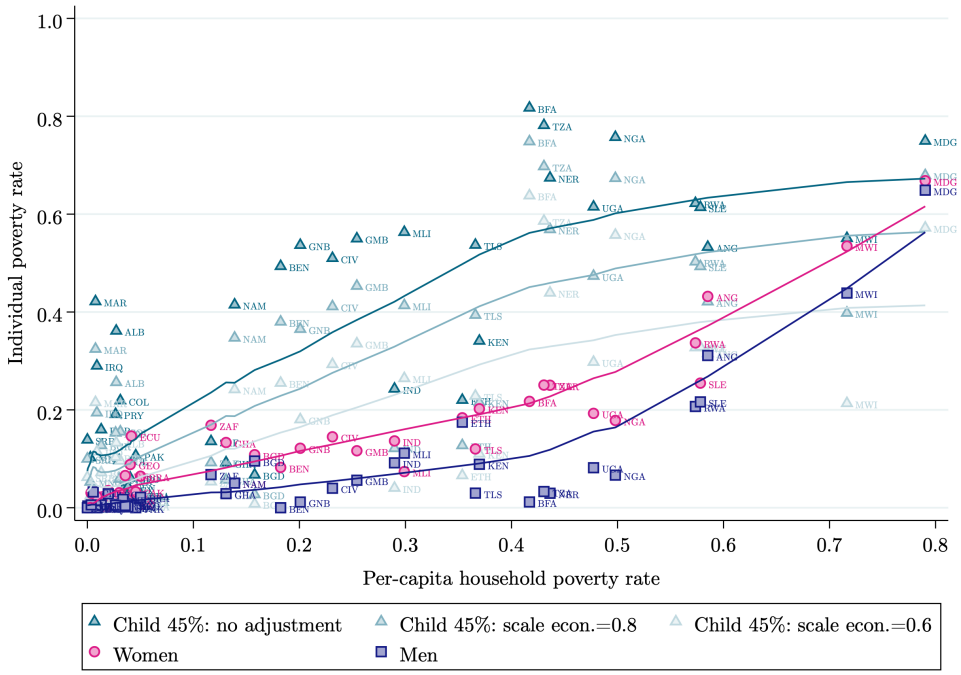
Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates country-level individual poverty rates of men, women, and children by per-capita household poverty estimates. Poverty rates are calculated for the sample of households with men, women, and children. Individual poverty rates are based on predicted resource shares for women, men, and children. Results for child poverty are presented for four equivalence scales in graph (a): (i) the same as an adult (no adjustment), (ii) 60% of an adult, (iii) 45% of an adult, and (iv) 30% of an adult; and for three levels of scale economies in graph (b), assuming 45% equivalence scale for child needs: (i) 1.0, (ii) 0.8, and (iii) 0.6. Smooth lines are based on locally weighted regressions of country-level individual poverty rates on per-capita household poverty.

Figure A7: Individual versus Per-Capita Household Poverty (Poverty Line at $1.9/day, 2011 PPP)

(a) Variation in equivalence scales for children



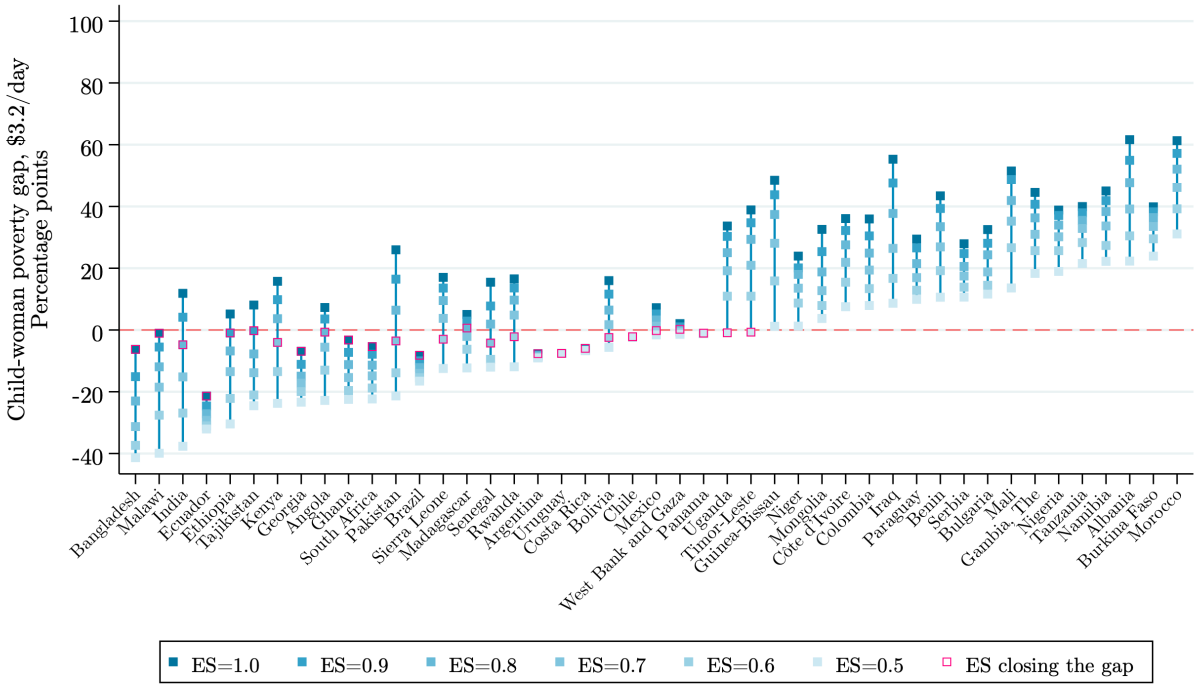
(b) Variation in scale economies among children



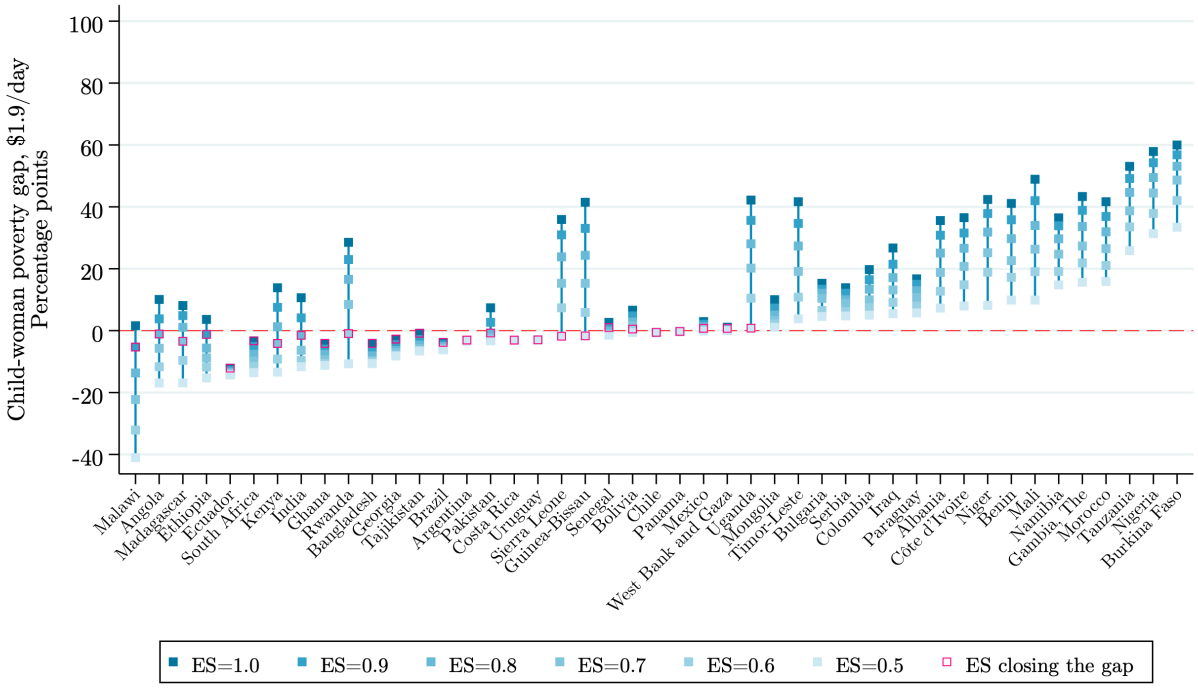
Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates country-level individual poverty rates of men, women, and children by per-capita household poverty estimates. Poverty rates are calculated for the sample of households with men, women, and children. Individual poverty rates are based on predicted resource shares for women, men, and children. Results for child poverty are presented for four equivalence scales in graph (a): (i) the same as an adult (no adjustment), (ii) 60% of an adult, (iii) 45% of an adult, and (iv) 30% of an adult; and for three levels of scale economies in graph (b), assuming 45% equivalence scale for child needs: (i) 1.0, (ii) 0.8, and (iii) 0.6. Smooth lines are based on locally weighted regressions of country-level individual poverty rates on per-capita household poverty.

Figure A8: Child-Woman Poverty Gap at Varying Levels of Scale Economies among Children

(a) Poverty Line at $3.2/day, 2011 PPP



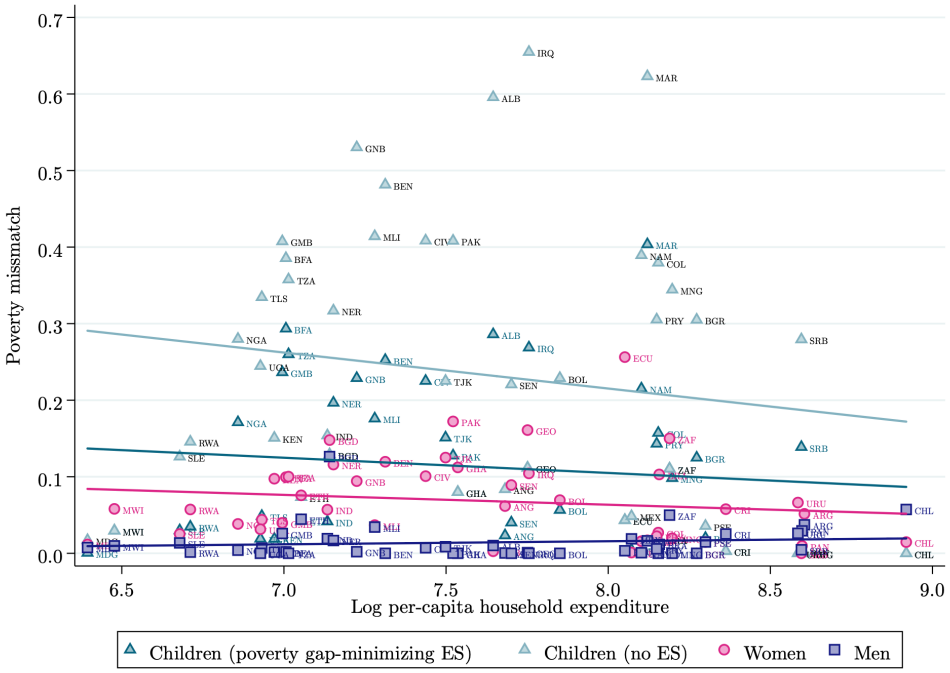
(b) Poverty Line at $1.9/day, 2011 PPP



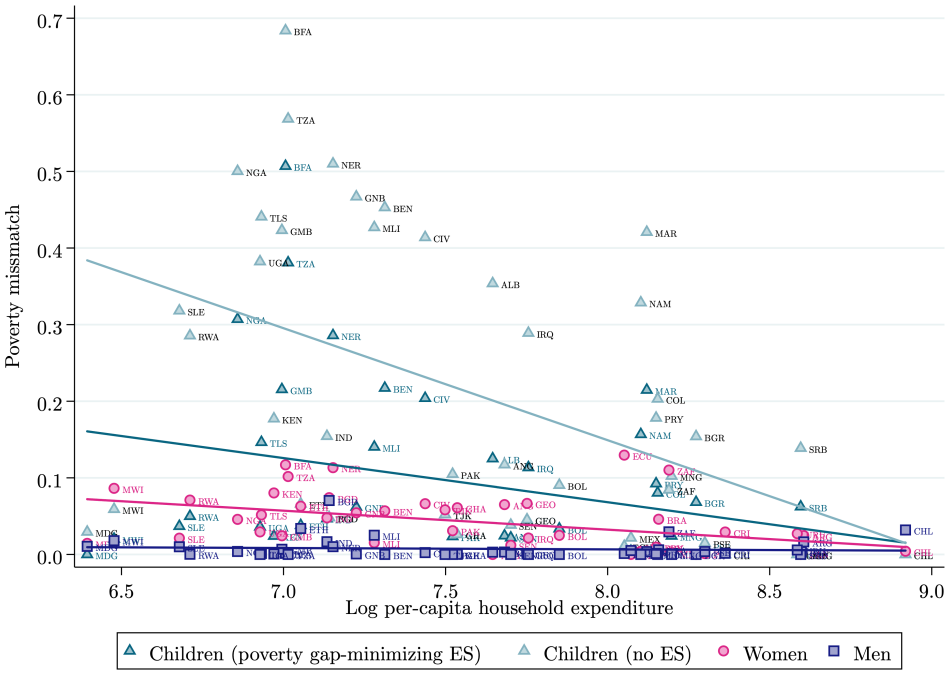
Source: Authors' estimations using data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates the difference between children's and women's poverty at the five levels of scale economies (1, 0.9, 0.8, 0.7, 0.6, and 0.5), with child needs fixed at 45% of an adult. Marker colors indicate the levels of scale economies. Pink-bordered markers show the highest value of scale economies that closes the child-woman poverty gap.

Figure A9: Proportion of Poor Individuals in Non-Poor Households

(a) Poverty Line at $3.2/day, 2011 PPP



(b) Poverty Line at $1.9/day, 2011 PPP



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates the proportion of poor individuals living in non-poor households. Poverty mismatch rates are calculated for the sample of households with men, women, and children. Individual poverty rates are based on predicted resource shares for women, men, and children. Child needs are set at 45% of an adult. Poverty gap-minimizing values of scale economies are identified for each country based on Figure A8. The trend lines represent fitted regression of poverty mismatch on log per-capita household expenditure. Child poverty mismatch in Madagascar and Malawi is low due to their high level of child poverty in both measures.

6 Cross-Validation: Checks and Additional Results

- Table A9: Child undernutrition, per-child resource shares and poverty correlations
- Table A10: Correlation of child resource shares with child wasting using alternative poverty line (at $1.9/day)
- Figure A10: Sensitivity of micro cross-validation: per-child resource shares and poverty vs. child stunting (selected countries)
- Figure A11: Contribution of within-household inequality to overall inequality in individual resources.

Table A9: Child Undernutrition, Per-Child Resource Shares and Poverty Correlations

	Child resource share	Poverty at $3.2/day		Poverty at $1.9/day	
		Per-capita poverty	Child poverty	Per-capita poverty	Child poverty
	(1)	(2)	(3)	(4)	(5)
Panel A. Correlation with child wasting					
Macro-level correlation	-0.29	0.43	0.53	0.17	0.41
Burkina Faso	-0.62	0.34	0.47	0.14	0.55
Ethiopia	-0.50	0.16	0.26	0.01	0.07
Iraq	-0.57	0.29	0.30	0.32	0.35
Kenya	-0.82	0.67	0.67	0.73	0.76
Malawi	-0.69	0.37	0.44	0.40	0.41
Namibia	-0.51	0.44	0.51	0.49	0.51
Timor Leste	-0.32	0.15	0.17	0.03	0.16
Uganda	-0.43	0.33	0.31	0.50	0.33
Panel B. Correlation with child stunting					
Macro-level correlation	-0.22	0.79	0.74	0.63	0.67
Burkina Faso	-0.78	0.40	0.60	0.49	0.59
Ethiopia	-0.63	0.31	0.39	0.22	0.33
Iraq	-0.78	0.26	0.81	0.24	0.78
Kenya	-0.87	0.66	0.68	0.58	0.68
Malawi	-0.33	0.33	0.31	0.08	0.09
Namibia	-0.82	0.60	0.87	0.28	0.80
Timor Leste	-0.21	-0.04	-0.05	0.07	0.01
Uganda	-0.58	0.51	0.51	0.25	0.53

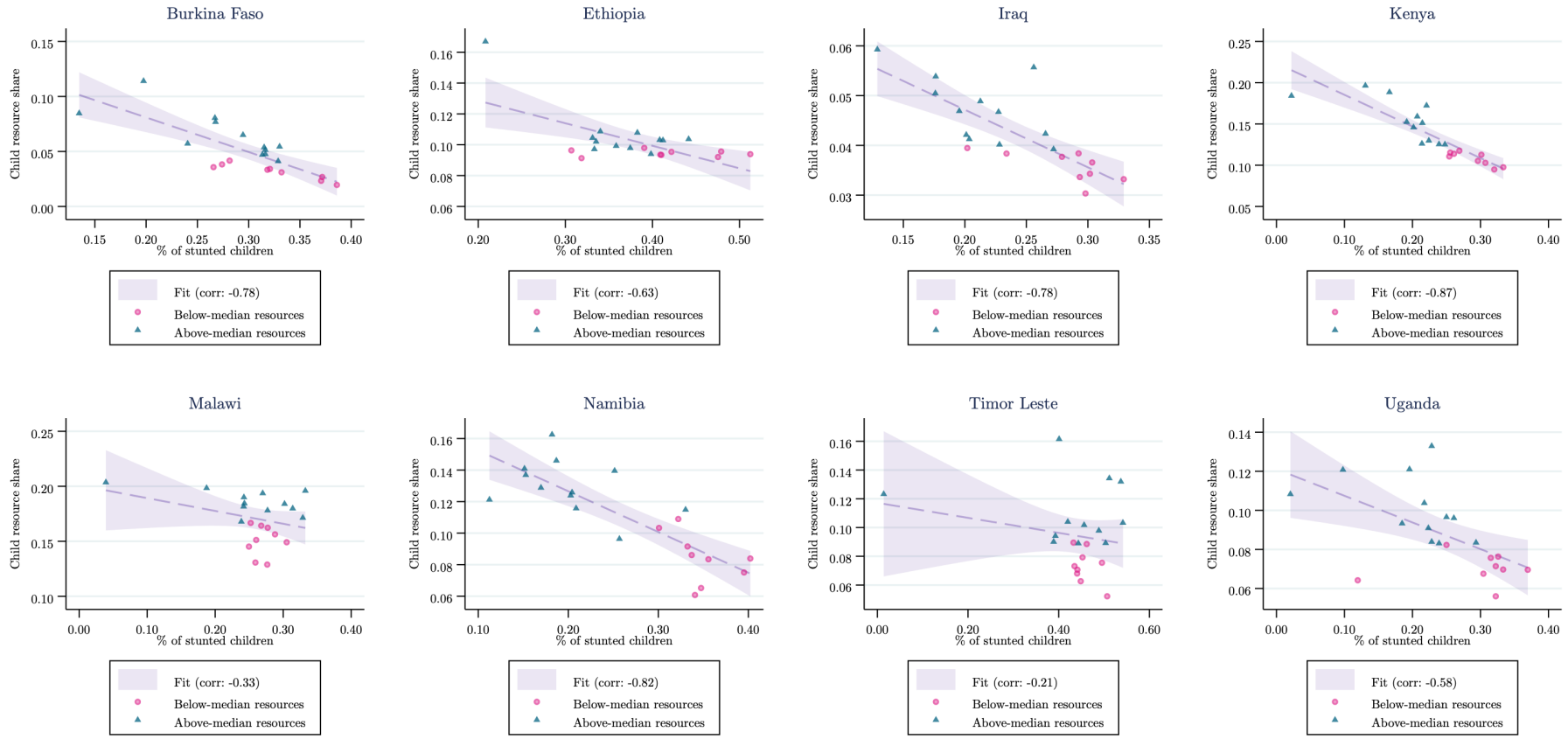
Source: Authors' estimations using the data from household expenditure surveys for 45 countries for macro-level correlations and eight countries that record micro-level information on child anthropometrics for micro-level correlations. *Notes:* Table reports the cross-country (macro-level) and within-country correlation coefficients between child undernutrition indicators, per-child shares, and poverty (household and per-child). Child needs are set at 45% of an adult. Sample of households with men, women, and children.

Table A10: Correlation of Child Resource Shares with Child Wasting (Poverty Line at $1.9/day, 2011 PPP)

	Prevalence of child wasting (reported by WHO)			Proportion of wasted children in the household (calculated in microdata)		
	(1)	(2)	(3)	(4)	(5)	(6)
Per-capita household poverty	0.054		0.060	0.027***		0.027***
	(0.043)		(0.041)	(0.004)		(0.004)
Per-child share		-0.279**	-0.291**		-0.091***	-0.082**
		(0.131)	(0.129)		(0.035)	(0.035)
Country FE	n.a	n.a	n.a	YES	YES	YES
Observations	44	44	44	31,060	31,060	31,060
Adjusted R-squared	0.014	0.077	0.101	0.013	0.011	0.013

Source: Authors' estimations using the data from household expenditure surveys for 44 countries, WHO reports on wasting (columns 1-3), and data from household expenditure surveys for seven countries that record micro-level information on child anthropometrics (columns 4-6). *Notes:* Table reports the coefficients from regressions of child wasting (children up to 5 years of age) against per-capita poverty and estimated child shares. Timor Leste is excluded because of extreme child-wasting prevalence in 2007. Child needs are set at 45% of an adult. Households with men, women, and children. Standard errors in parentheses. *, **, *** indicate 10%, 5% and 1% significance level.

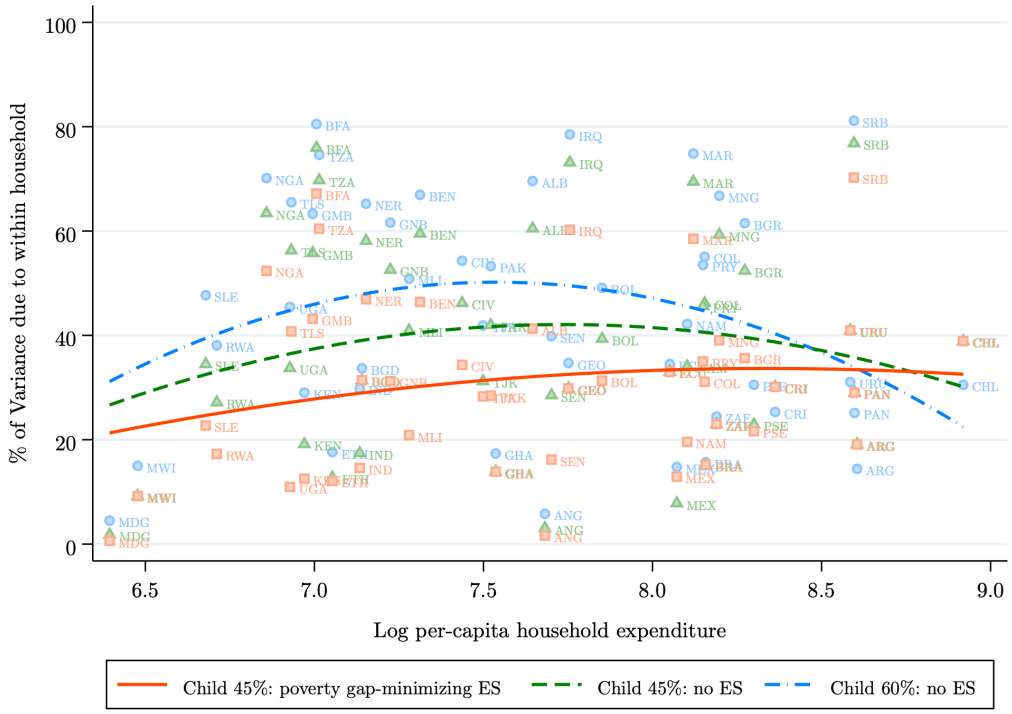
Figure A10: Sensitivity of Micro Cross-Validation: Per-Child Resource Shares and Poverty vs. Child Stunting (Selected Countries)



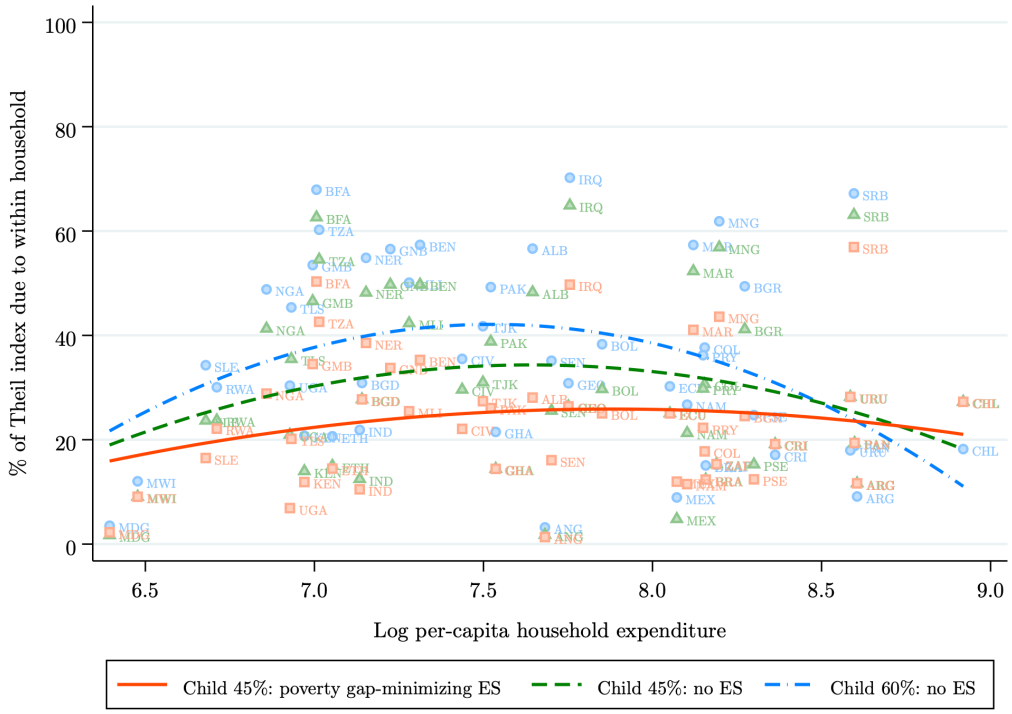
Source: Authors' estimations using the data from household expenditure surveys for eight countries that record micro-level information on child anthropometrics. *Notes:* Graphs illustrate average per-child shares by the prevalence of child stunting averaged over 20 bins of per-capita household expenditure, differentiating between households with above- or below-median per-capita resources. Correlations between child resource shares and child stunting are reported in legends.

Figure A11: Contribution of Within-household Inequality to Overall Inequality in Individual Consumption

(a) Variance



(b) Theil index



Source: Authors' estimations using the data from household expenditure surveys of 45 countries. *Notes:* Figure illustrates the country-level weight of within-household inequality in total inequality (across people). In panel (a) inequality is measured by the variance index and in panel (b) by the Theil index of log individual expenditure. Within inequality is the difference between total inequality in individual consumption and inequality between households (assuming equal sharing in households). Smooth lines are based on quadratic fit of the weight of within-household inequality on log per-capita expenditure.