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Measuring Poverty within Filipino Households: Examining of Resource Sharing and Economies of Scale

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Abstract

The Philippine government's long-term vision, *AmBisyon Natin* 2040, aims for a prosperous, predominantly middle-class society where no one is poor. The Philippine Development Plan 2023-2028 emphasizes strategies to develop and protect individual and family capabilities by reducing vulnerabilities and strengthening social protection. While official poverty statistics indicate progress in poverty reduction at the aggregate level, with poverty incidence declining to 16.4 percent in the first semester of 2023, standard measurement approaches may mask significant inequalities in resource allocation within households. This study examines household resource sharing in the Philippines using a collective household model to construct poverty indices that complement official poverty statistics. Using data from the Family Income and Expenditures Survey, we estimate Engel curves for different demographic groups based on assignable good expenditures including clothing, cereals, and protein-rich foods. We also analyze individual-level food consumption data from the National Nutrition Survey to estimate food poverty using caloric intake. Our findings reveal substantial gender and age-based disparities in resource allocation, with particularly concerning implications for women and children in vulnerable household types. Child poverty rates under our methodology are up to twice as high as suggested by standard measures, while women consistently show higher poverty rates than men, especially in rural areas. Analysis across basic sectors reveals varying patterns of intra-household inequality, with farmers and fisherfolk showing particularly complex disparities between clothing-based and food-based poverty measures. While official statistics show poverty rates of 30.0% for farmers and 30.6% for fisherfolk, our adjusted estimates suggest significant variations in poverty rates depending on the choice of assignable good, indicating that standard approaches may misunderstand both the extent and nature of poverty among vulnerable groups. These results suggest the need for more nuanced, sector-sensitive approaches to both poverty measurement and social protection policies that explicitly consider intra-household inequality patterns across different basic sectors.

Keywords: poverty, household economics, household inequality, social protection, basic sectors

Abbreviations

AmBisyon	*Ambisyon Natin* 2040
BIHS	Bangladesh Integrated Household Survey
DLP	Dunbar, Lewbel, and Pendakur model
DSWD	Department of Social Welfare and Development
ENNS	Expanded National Nutrition Survey
ESCAP	Economic and Social Commission for Asia and the Pacific
FIES	Family Income and Expenditure Survey
FNRI	Food and Nutrition Research Institute
L-DLP	Linear Dunbar-Lewbel-Pendakur model
LFS	Labor Force Survey
LGU	Local Government Unit
NEDA	National Economic and Development Authority
NNS	National Nutrition Survey
OLS	Ordinary Least Squares
PDP	Philippine Development Plan
PHP	Philippine Peso
PSA	Philippine Statistics Authority
SDG	Sustainable Development Goal
SUR	Seemingly Unrelated Regression
4Ps	Pantawid Pamilyang Pilipino Program

Table of Contents

List of Tables

List of Figures

Measuring Poverty within Filipino Households: Examining of Resource Sharing and Economies of Scale

Jose Ramon G. Albert, Connie B. Dacuycuy, Imelda Agdeppa, Jan Carlo Punongbayan, Deanne Lorainne D. Cabalfin, Anna Rita P. Vargas, Charmaine A. Duante, Eldridge B. Ferrer, and Chona M. Fernandez-Patalen [1]

1. Introduction

The Philippine government's national vision blueprint, *AmBisyon Natin* 2040, envisions the country as a prosperous and predominantly middle-class society where no one is poor (NEDA 2016). The Philippine Development Plan (PDP) 2023-2028 emphasizes strategies that develop and protect capabilities of individuals and families by reducing vulnerabilities and strengthening social protection (NEDA 2023). Reducing poverty incidence to a single-digit level (9 percent) by 2028 is one of the target outcomes in the PDP 2023-2028.

To support these aspirations and strategies, developing more sophisticated approaches to measuring poverty is crucial. While standard measures provide valuable insights at the aggregate level, they often fail to capture the multidimensional nature of poverty (Klasen and Lahoti2018) and may obscure the experiences of vulnerable groups within households. This measurement challenge is particularly relevant for the Philippines, where regional income disparities create varied poverty outcomes at the household level, and where traditional measurement approaches may understate the severity of poverty experienced by women, children, and the elderly. Enhanced poverty metrics would not only provide a more accurate picture of deprivation but would also better inform policymaking in critical areas such as social protection, women's empowerment, and human capital development among youth.

Addressing poverty requires understanding the deprivation experienced by vulnerable groups, including the basic sectors[2] identified in the Social Reform and Poverty Alleviation Act such as farmers, fisherfolk, and informal sector workers, as well as demographic groups such as women, children, and the elderly.

The Philippine Statistics Authority (PSA) currently employs a standard methodology for poverty measurement that aligns with international practices but may not fully capture intra-household dynamics. This methodology, as outlined by Albert (2008), encompasses three key components:

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[2] The basic sectors in the Philippines are identified in Republic Act 8425 (Social Reform and Poverty Alleviation Act) and include farmers, fisherfolk, workers in the informal sector, indigenous peoples, urban poor, women, youth and students, persons with disabilities, victims of disasters and calamities, senior citizens, and children. The PSA regularly generates official poverty statistics for nine of these fourteen sectors that have both sectoral and income data: women, youth, children, senior citizens, individuals residing in urban areas, migrant and formal sector workers, farmers, fisherfolk, and persons with disability (starting 2018). PSA also produces poverty estimates for individuals residing in rural areas and self-employed and unpaid family workers (as proxy for informal sector workers). These sector-specific poverty statistics complement the regular poverty estimates and help inform targeted policy interventions.

(a) the use of per capita income as a welfare indicator (sourced the Family Income and Expenditure Survey), (b) the setting of poverty lines that separate the poor from the non-poor, and (c) the aggregation of poverty data into summary statistics (Albert 2008). The approach incorporates both food and non-food dimensions, with the food component of poverty lines calibrated to the cost of a 2,000-kilocalorie daily requirement based on a one-day food menu developed by the Food and Nutrition Research Institute (FNRI).The food component is adjusted upward by dividing it by an estimate of Engel's coefficient to indirectly estimate the non-food component and add this non-food component to the food component and thus obtain the total poverty line. While this methodology, which produces about 170 poverty lines for urban-rural areas in each province functioning as an implicit cost of living index, is robust for aggregate analysis, it rests on the critical assumption of equal resource distribution within households.

According to PSA (2022), the poverty incidence at the national level in 2021 stood at 18.1 percent (**Table 1**). When compared with the latest figures pre-Covid, these statistics are higher. However, this year, the PSA (2024) estimated poverty incidence at 15.5 percent (of the population).

Table 1. Poverty Incidence, Poverty Gap and Severity of Poverty in the Philippines: 2021

	Index Estimates			Share to Total		
	Poverty incidence	**Poverty gap**	**Severity of poverty**	**Poverty incidence**	**Poverty gap**	**Severity of poverty**
Philippines	18.1	3.0	1.0			
National Capital Region	3.5	0.3	0.1	2.4%	1.5%	1.1%
Cordillera Administrative Region	9.9	1.3	0.4	0.9%	0.8%	0.7%
I – Ilocos Region	14.4	2.3	0.7	3.8%	3.4%	3.2%
II - Cagayan Valley	15.4	2.4	0.8	2.8%	2.6%	2.4%
III - Central Luzon	11.4	1.6	0.5	7.2%	6.0%	5.3%
IV-A - CALABARZON	10.2	1.4	0.4	8.4%	7.1%	6.4%
IV-B - MIMAROPA	20.8	3.5	1.2	3.3%	3.4%	3.4%
V - Bicol	29.3	5.0	1.7	9.1%	9.2%	9.0%
VI - Western Visayas	19.0	2.9	0.9	7.5%	6.9%	6.4%
VII - Central Visayas	27.6	5.7	2.1	11.1%	12.7%	14.1%
VIII - Eastern Visayas	28.9	5.2	1.8	6.9%	7.2%	7.3%
IX - Zamboanga Peninsula	30.1	6.1	2.3	5.8%	6.7%	7.4%
X - Northern Mindanao	26.1	4.5	1.5	6.7%	7.0%	7.2%
XI - Davao	16.8	2.5	0.8	4.6%	4.4%	4.3%
XII - SOCCSKSARGEN	28.1	5.4	2.0	7.0%	8.1%	8.8%
XIII - Caraga	33.2	6.2	2.1	4.6%	5.0%	5.0%
Bangsamoro Autonomous Region in Muslim Mindanao	37.2	6.7	2.3	7.9%	8.1%	8.1%

Source: PSA 2021 Full Year Official Poverty Statistics

Effectively addressing poverty requires a nuanced understanding of how deprivation is experienced by vulnerable groups, particularly women, children, and the elderly. A critical limitation of standard poverty measurement approaches is their implicit assumption of equal resource sharing within households. However, an extensive body of literature in household

economics challenges this assumption, suggesting that intra-household resource allocation can be highly unequal. This inequality in sharing has profound implications for our ability to accurately measure and understand poverty at the individual level, potentially leading to systematic underestimation of poverty among certain household members.

Conventional poverty measurement in many developing countries, including the Philippines, uses monetary indicators of welfare such as per capita income or consumption estimates at the household level to identify poor from non-poor households. However, these poverty metrics can mask unequal allocation of resources and deprivation experienced by certain members within households. Global data indicates domestic, childcare, and elderly care work burdens disproportionately fall upon women. Elderly individuals also face higher out-of-pocket medical costs that can push them into transient poverty.

This study aims to develop an enhanced methodology for measuring poverty that accounts for unequal resource allocation and economies of scale within households. We address the following key questions:

- How would official poverty statistics and resulting policy priorities shift if poverty thresholds were adjusted based on practical economies of scale and the real consumption needs across various demographic profiles?
- How can household survey instruments and analysis be enhanced to better capture individual-level deprivation and inequalities in access to resources among members within the same households?
- What policy and programmatic interventions would be required to address the specific drivers of higher poverty risks among women, youth, and the elderly if current monitoring masks the unequal distribution of poverty?

The remainder of this discussion paper is organized as follows. Section 2 provides a comprehensive review of related literature, covering theoretical foundations, empirical studies, and methodological advancements in measuring intra-household resource allocation and poverty. Section 3 details our methodology, including the conceptual framework, empirical strategy, data sources, and estimation techniques. Section 4 will present our preliminary results once the data analysis is completed. Section 5 discusses the implications of our findings for poverty measurement and policy, as well as limitations and directions for future research. Finally, Section 6 concludes with a summary of key findings and their significance for poverty reduction efforts in the Philippines.

2. Review of Related Literature

High intrahousehold inequality likely results in underestimation of poverty rates in the Philippines when using standard household-level data. The literature underscores the complexity of measuring poverty and the importance of considering intra-household dynamics.

2.1. Empirical Studies on Intra-household Inequality and Poverty

The concept of economies of scale in household consumption is crucial for accurate poverty measurement. Traditional poverty measures, including those used in the Philippines, often assume no economies of scale – effectively treating a household of four as requiring twice the resources of a household of two. However, this assumption ignores the shared nature of many household goods and services.

A significant methodological advancement in addressing household size effects comes through the development of equivalence scales, which provide systematic adjustments to household income or expenditure based on household composition. As defined by Pollak and Wales (1997), these scales represent the ratio between the cost of living for households of different sizes and compositions relative to a reference household (typically a single adult), while maintaining equivalent utility levels. This approach provides a more nuanced framework for comparing welfare across different household types, though it still faces challenges in accounting for intra-household allocation patterns.

The Organization for Economic Cooperation and Development (OECD) has been at the forefront of developing and applying equivalence scales for cross-country comparisons of income inequality and poverty. The Oxford Scale, used by the OECD (1982), assigns weights of 1 to the household head, 0.7 to each additional adult, and 0.5 to each child. This scale recognizes that additional household members increase needs, but not proportionally.

More recently, the OECD (2008) has adopted a simpler scale that divides household income by the square root of household size. This approach reflects the principle of decreasing marginal costs as household size increases. For example, under this scale, a household of four would need only twice (not four times) the income of a single-person household to maintain the same standard of living.

The evolution and widespread adoption of these scales reflect a growing recognition within the development economics community of the critical importance of accounting for economies of scale in poverty measurement. Nevertheless, the substantial variation in poverty estimates resulting from different scale choices underscores the need for careful methodological consideration and potentially context-specific adaptation, particularly in developing countries like the Philippines where household structures and consumption patterns may differ significantly from those in developed economies.

2.2. Empirical Studies on Intra-household Inequality and Poverty

Recent empirical work has made significant strides in measuring poverty at the individual level using collective household models. These studies typically rely on information about "assignable goods" – items that can be clearly attributed to specific household members – to identify resource shares within households. This approach has revealed that ignoring intrahousehold inequality can lead to substantial mismeasurement of poverty.

Dunbar et al. (2013) developed a groundbreaking nonlinear model of household resource sharing using data from Malawi. Their approach uses expenditure on clothing and footwear as assignable goods to construct Engel curves for men, women, and children. Their findings are striking: resources are not shared equally within households, leading to a significant underestimation of child poverty when using standard metrics. They also uncovered important gender asymmetries in resource allocation. In line with Duflo's (2003) work, they found that mothers, more than fathers, tend to transfer more resources to children as family size increases. Interestingly, in households where mothers have higher education levels, they appear to have stronger bargaining power, resulting in fathers allocating more resources to both the mother and children.

Calvi's (2020) study in India provides compelling evidence of how intra-household inequality can have severe consequences. She demonstrated that the excess female poverty resulting from gender asymmetry in household bargaining power can explain higher mortality rates among post-reproductive age women. This finding underscores the potential life-and-death implications of intra-household resource allocation and suggests that policies aimed at equalizing resource access between men and women could have significant impacts on women's well-being and survival.

Brown et al. (2021) made important methodological advances in their study of Bangladesh. They used food consumption data to estimate resource shares, introducing an innovative approach to adjust for calorie-based intake. By creating an equivalence scale based on relative caloric requirements by gender and age, they provided a more nuanced picture of individual-level poverty. Their work highlighted that anti-poverty measures might miss their intended beneficiaries – women, children, and the elderly – who may be living in households classified as non-poor due to unequal resource distribution. Importantly, they found that undernourished individuals are spread across different expenditure classes, challenging simplistic notions of poverty. On a positive note, they observed that more educated households tend to distribute resources more equitably among women and children.

De Vreyer and Lambert's (2020) work in Senegal sheds light on how complex household structures, common in many Sub-Saharan African countries, can lead to underestimation of inequality in standard consumption surveys. Their finding that 13.4 percent of poor individuals live in non-poor households has profound implications for the design and targeting of anti-poverty and redistribution policies.

Several other important studies have advanced our understanding of intra-household resource allocation across different contexts. Bargain et al. (2014, 2018) made significant contributions through their application and validation of collective models in Côte d'Ivoire and Bangladesh. In examining household dynamics in Ghana and Jamaica, Bose-Duker (2019) and Bose-Duker et al. (2020) provided valuable insights into children's resource shares. Penglase (2020) enriched the literature through research in Malawi that revealed foster children often receive similar treatment to biological children in terms of household resource allocation. Additionally, Santaeulalia-Llopis and Zheng (2017) offered important methodological insights through their work in China, warning against the indiscriminate application of adult-equivalent consumption measures and demonstrating how their effectiveness varies based on consumption basket composition and household demographics, particularly the presence of young children.

The field has seen significant methodological progress, particularly in modeling household decision-making and resource allocation. Browning, Chiappori, and Lewbel (2013) made a major contribution by extending the collective model to incorporate good-specific economies of scale. Their nonparametric approach identifies individual resource shares and allows for general forms of goods sharing within households. By modeling households in terms of individual utility functions, a bargaining or social welfare function, and a consumption technology function, they showed that significant savings from consumption economies of scale (about one-third of total expenditures) can be realized when couples live together.

Dunbar, Lewbel, and Pendakur (2013) further advanced the field by demonstrating semiparametric identification using only household demand functions with budget variation. This approach reduced the data requirements for estimating intra-household resource allocation, making it more feasible to apply in developing country contexts where price variation data might be limited or unreliable.

A significant recent advancement is the linear reframing of the DLP model (L-DLP) proposed by Lechene, Pendakur, and Wolf (2020). This approach allows for the estimation of resource shares using existing household survey data and ordinary least squares estimation of Engel curves. The L-DLP model is more easily implementable than its predecessors and can accommodate households with multiple men and women, making it particularly suitable for analyzing complex household structures common in many developing countries. The authors emphasize the importance of collecting data on assignable goods, advocating for statistical agencies to prioritize this in their survey designs.

The literature has been further enriched by several key contributions that have enhanced our understanding of household consumption and resource allocation. Lewbel and Pendakur (2008) advanced the field through their innovative work on estimating consumption economies of scale, developing adult equivalence scales, and analyzing household bargaining power dynamics. Dunbar et al. (2019) made an important advancement by introducing randomness into resource share estimation, thereby making the models more flexible and better able to capture real-world variation in household behavior. The field's methodological toolkit was further expanded by Sokollu and Valente (2019) and Brown et al. (2021), who explored alternative identifying assumptions, thus making these analytical approaches more adaptable to diverse data environments and contexts.

2.3. Gender Dimensions of Poverty

The gendered nature of poverty has emerged as a critical focus in development economics research, with mounting evidence suggesting systematic differences in how poverty affects men and women. Muñoz Boudet et al.'s (2021) landmark study, analyzing household surveys across 89 countries, provides compelling evidence of these gender disparities. Their finding that girls and women of reproductive age face disproportionately higher poverty risks compared to their male counterparts underscores the deeply gendered nature of economic deprivation. Particularly noteworthy is their identification of nuclear families with two married adults and children as the predominant household type for poor women, representing 41% of poor households. This finding

challenges conventional assumptions about which household structures might be most vulnerable to poverty and suggests the need for more nuanced policy approaches.

This research reveals a complex interplay between household composition, gender, and poverty outcomes. The presence of children and dependents not only increases a household's vulnerability to poverty, but does so in ways that disproportionately affect women. A particularly significant finding is the emergence of "time poverty" among many women, where the convergence of care responsibilities with prime economic productive years creates a double burden that substantially constrains women's economic opportunities. The study's identification of single female adults with children as the most economically vulnerable demographic, followed by households with children and multiple adults, suggests that the intersection of gender and household structure plays a crucial role in determining poverty outcomes.

Importantly, the study identified formal education and the pooling of resources (having more working adults for pay in a household) as protective factors against poverty, especially for women. This finding has significant implications for policy, suggesting that investments in education and strategies to support women's labor force participation could have substantial impacts on reducing female poverty.

Kugler et al.'s (2021) study on the impacts of the COVID-19 pandemic revealed the heightened vulnerability of females, young people, less educated individuals, and urban workers. The finding that gender gaps in work stoppage were particularly pronounced and stemmed mainly from differences within sectors rather than differential employment patterns across sectors highlights the need for gender-sensitive economic policies, especially in times of crisis.

Newhouse et al. (2017) provided important insights into child poverty, estimating rates of extreme poverty among children across 89 countries. Their finding that children are more likely to be poor than adults, even after adjusting for different poverty lines, underscores the vulnerability of this demographic and the need for targeted interventions to address child poverty.

2.4. Studies on Poverty and Inequality in the Philippines

Research focused specifically on the Philippine context has yielded crucial insights into the country's unique poverty dynamics and the complex relationships between household characteristics and economic outcomes. Recent research by Albert et al. (2023) examining poverty among elderly persons in Asia and the Pacific, including the Philippines, highlights how conventional poverty measurement approaches may understate elderly poverty due to assumptions about equal resource sharing within households. Their analysis of household surveys reveals that elderly persons living alone, particularly women, face distinct vulnerabilities in terms of income sources, expenditure patterns, and asset ownership. This work underscores the importance of considering living arrangements when analyzing poverty, as elderly persons residing without other household members often experience different consumption patterns and resource constraints compared to those in multi-generational households.

Orbeta's (2005) seminal study examining the impact of family size on household welfare and vulnerability to poverty in the Philippines has been particularly influential in shaping our

understanding of these relationships. The study revealed several interconnected patterns that highlight the multifaceted nature of poverty in the Philippine context.

First, the study demonstrated a clear regressive relationship between family size and economic welfare, with larger families facing significantly higher poverty risks. This effect proved particularly pronounced particularly pronounced among households in lower-income quintiles, suggesting that family size may function as a poverty multiplier for already vulnerable households.

Furthermore, the research uncovered substantial gender asymmetries in how family size affects economic outcomes. Additional children were found to have a disproportionately negative impact on mothers' welfare, primarily through reduced labor force participation and decreased wage income. This effect was most pronounced among mothers from poor and lower middle-income households, highlighting the intersectionality of gender, poverty, and family size.

The study also revealed concerning intergenerational implications, as increasing family size was associated with deteriorating educational outcomes for children. This negative relationship exhibited a clear socioeconomic gradient, with more severe effects observed in poorer households and intensifying as children advanced through the education system, suggesting potential poverty trap mechanisms.

From a policy perspective, Orbeta concluded that the strong correlation between household size and poverty suggests that targeting large households could serve as an effective proxy for reaching poor households, and vice versa. This finding has significant implications for the design and implementation of poverty alleviation programs in the Philippines.

Tabuga and Cabaero's (2019) comprehensive examination of gender disparities in social protection in the Philippines revealed a complex web of interconnected challenges that systematically disadvantage women in accessing social protection measures. Their analysis provides crucial insights into the structural barriers that perpetuate gender-based economic inequalities in the Philippine context.

A primary finding of their research centers on the fundamental relationship between labor force participation and social protection access. The study demonstrates that women's limited access to social insurance can be largely attributed to their constrained ability to participate in the formal labor force, highlighting the critical interconnection between employment policies and social protection outcomes. This finding suggests that addressing gender disparities in social protection requires a more holistic approach that encompasses both labor market and social policy interventions.

The research also uncovered significant variations in social protection coverage based on marital status, with married women showing notably lower enrollment rates in social insurance schemes. This pattern suggests the existence of systematic gaps in coverage for this demographic group, potentially stemming from traditional gender roles and household dynamics that may limit married women's economic independence.

Sectoral analysis revealed pronounced disparities in social protection coverage, with women in agricultural and rural households facing particularly significant barriers to accessing social insurance. This finding points to the intersection of gender and geographic location in determining social protection outcomes, suggesting the need for sector-specific interventions that account for the unique challenges faced by rural women.

The study identified complex age-related patterns in social insurance coverage, characterized by a U-shaped relationship where coverage increases with age for younger women but declines for older women. This non-linear pattern suggests the need for age-differentiated approaches to social protection policy, with particular attention to the vulnerabilities faced by older women who may have spent significant portions of their lives in informal or unpaid work.

Based on these findings, Tabuga and Cabaero advocate for a fundamental redesign of social protection policies to explicitly account for gender disparities in societal and economic roles. Their recommendations emphasize the importance of prioritizing government social protection efforts in sectors with high female participation and particular vulnerability, such as domestic work and agriculture. This targeted approach, they argue, would help address the systematic disadvantages faced by women in accessing social protection while acknowledging the diverse needs of different female demographic groups.

These studies provide a foundation for understanding poverty and inequality in the Philippines, but also highlight the need for more empirical research that considers intra-household dynamics and individual-level poverty measurement.

2.5. Gaps in the Literature

While the literature on intra-household resource allocation and poverty measurement has advanced considerably in recent years, several critical gaps remain that warrant further investigation, particularly in the context of developing economies like the Philippines.

First, there is a notable scarcity of research applying advanced intra-household resource allocation models to Southeast Asian contexts, including the Philippines. The unique cultural, economic, and social characteristics of this region may lead to different patterns of intra-household resource allocation that differ significantly from those observed in other parts of the world where such studies have been more prevalent.

A second significant gap relates to methodological validation through the comparison of different assignable goods. Most existing studies rely heavily on a single type of assignable good, typically clothing, to estimate resource shares. There is a pressing need for research that systematically compares results using different assignable goods to assess the robustness of findings and understand potential biases associated with different types of consumption indicators.

The translation of research findings into actionable policy recommendations represents another crucial gap. While many studies highlight the potential policy relevance of their findings, there is insufficient exploration of concrete policy implications, particularly for social protection

programs. This gap is especially relevant in the Philippine context, where social protection systems are still evolving.

The integration of nutritional data with consumption-based poverty measures remains limited, despite the crucial importance of nutrition for overall well-being, especially for children. This represents a significant opportunity for developing more comprehensive understanding of multidimensional poverty at the individual level.

Research on complex household structures, particularly common in the Philippine context where extended family households are prevalent, remains underdeveloped. While some studies have examined these structures, there is still limited understanding of how they impact poverty measurement and resource allocation.

The predominance of cross-sectional studies in the field limits our understanding of how intra-household dynamics and individual poverty evolve over time, especially in response to economic shocks or policy interventions. Longitudinal studies could provide valuable insights into the temporal dynamics of resource allocation and poverty.

The intersection of multiple vulnerability factors such as disability status, ethnicity, or migration background with intra-household resource allocation remains understudied. This gap is particularly relevant for the Philippines, given its diverse population and significant internal and external migration flows.

Previous studies of poverty among basic sectors in the Philippines have largely relied on household-level measures. Our study extends this literature by examining how intra-household inequality affects our understanding of poverty among these vulnerable groups.

Finally, there is a notable lack of mixed-methods research that combines econometric analysis with qualitative insights to better understand the mechanisms behind observed patterns of resource allocation. Such integrated approaches could provide richer insights into how household decisions are made and how they affect individual welfare outcomes.

Finally, there is a notable lack of mixed-methods research that combines econometric analysis with qualitative insights to better understand the mechanisms behind observed patterns of resource allocation. Such integrated approaches could provide richer insights into how household decisions are made and how they affect individual welfare outcomes.

3. Methodology

3.1. Conceptual Framework

Our study adopts a collective household model framework, building on the work of Chiappori (1992) and extended by Browning, Chiappori, and Lewbel (2013). This approach views households as collections of individuals with distinct preferences, making Pareto-efficient decisions We extend this framework to address several critical dimensions of household behavior

and welfare. First, we explicitly incorporate the unequal distribution of resources within households, recognizing that household members may have differential access to and control over household resources. Second, we account for economies of scale in consumption, acknowledging that households can achieve efficiencies through shared consumption of certain goods and services. Third, we consider the differential needs across demographic groups, particularly between children and adults, as these varying requirements can significantly impact resource allocation patterns and individual welfare outcomes within the household.

The model enables the estimation of resource shares for different household members through careful analysis of assignable goods consumption patterns. Building on the theoretical foundations established by Chiappori (1992) and subsequent researchers, we use these estimated resource shares to construct individual-level consumption measures and derive more nuanced poverty estimates that account for intra-household inequality. This approach represents a significant advancement over traditional household-level poverty measures by explicitly acknowledging and quantifying the differential access to resources among household members.

Formally, we define a household h as consisting of n_h^t individuals of each type t, where t $\in \{m, f,$ *cm*, *cf*$\}$ represents adult males, adult females, male children, and female children, respectively, and $h = 1, 2, \ldots, 15$ is the index for the household typology. The total number of individuals in a household is $n_h = \sum_t n_h^t$.

Each individual in the household receives a share of the household budget. Individuals derive utility from consuming their share of a bundle of goods, facing a vector of prices p. Goods consumed in the household are either public (jointly consumed) or private.

Public goods are those that can be jointly shared or consumed within the household, for example, rent, electricity and water spending. Such data is not observed at the individual level. Because these goods are shared, everyone in the household faces a "shadow price" that is lower than the market price of the good if it were consumed by a person living alone. Private goods, however, are not shared. A private good that is *assignable* is one wherein we can identify which household member consumes it, and we can observe the quantity consumed per individual.

A household has an observed income (budget) denoted by y_h. Each household member gets a shadow budget that adds up to the total household budget. The *resource share* is the fraction of the household budget allocated to a type t person, denoted by η_h^t. For example, the shadow budget of all adult males in a household is $\eta_h^m y_h$, and the shadow budget of each adult male is $\eta_h^m y_h / n_h^m$.

To the extent that an individual's budget share available for their own consumption approximates a measure of their wellbeing, resource shares give us a picture of the distribution of welfare within the household.

The Engel curve of a good is the proportion of the total budget commanded by that good. Engel curve functions hold prices constant and evaluate the share of expenditure as a function of the total household budget, including possibly other demographic characteristics.

3.2. Empirical Strategy

Our empirical strategy centers on the Linear Dunbar-Lewbel-Pendakur (L-DLP) model, a methodological innovation developed by Lechene, Pendakur, and Wolf (2019). This approach represents a significant advancement in the empirical analysis of intra-household resource allocation, offering a more tractable framework compared to earlier nonlinear approaches. The L-DLP model's key innovation lies in its ability to estimate resource shares using standard ordinary least squares techniques, making it particularly suitable for application in developing country contexts where data limitations often constrain the use of more complex estimation strategies.

$$W_h^t = a_h^t + b^t \ln y_h + \varepsilon_h^t \quad (1)$$

where:

W_h^t is the budget share of the assignable good for type t in household h;
a_h^t is a constant term;
b^t is the slope coefficient;
y_h is the total household expenditure
ε_h^t is the error term

The resource share for type t is then estimated as:

$$\hat{\eta}^t = \frac{\hat{b}^t}{\sum_{t=1}^{T} \hat{b}^t} \quad (2)$$

To enhance the model's explanatory power and capture the complexity of Philippine household dynamics, we extend the basic L-DLP framework to incorporate a comprehensive set of covariates that may influence resource allocation patterns. These include detailed household composition variables, educational attainment levels of adult members, and urban/rural location indicators. This extension allows us to examine how socioeconomic and demographic factors mediate the relationship between household resources and individual welfare outcomes.

We apply this methodology both to the general population and to specific basic sectors, allowing us to examine how patterns of intra-household inequality vary across different vulnerable groups.

3.3. Data and Methods

Data Sources

Our empirical analysis draws upon two comprehensive national survey datasets that provide complementary insights into household consumption patterns and individual welfare outcomes in the Philippines.

The primary foundation of our analysis comes from the merged Family Income and Expenditure Survey (FIES) and Labor Force Survey (LFS) data for 2018 and 2021, accessed through the PSADA, the PSA's open micro-data archive platform. This merged dataset provides detailed information on household expenditure patterns, including crucial data on assignable goods like

clothing, while also capturing demographic and employment characteristics of household members. The integration of these surveys allows us to examine how labor market outcomes and household spending patterns interact to influence individual welfare outcomes.

We complement this with data from the Expanded National Nutrition Survey (ENNS) conducted by the Food and Nutrition Research Institute (FNRI) for 2018, 2019 and 2021. This dataset provides granular individual-level food consumption information, enabling us to construct more precise estimates of food poverty based on actual caloric intake rather than household-level food expenditure. The combination of these datasets allows for a more comprehensive assessment of poverty and deprivation than would be possible with either source alone.

The FIES-LFS data provides information on household expenditures, including assignable goods like clothing, as well as demographic and employment characteristics of household members. The ENNS data offers detailed individual-level food consumption information, allowing us to estimate food poverty based on caloric intake.

In this study, we follow PSA's methodology in identifying different vulnerable groups in the merged FIES-LFS data. Using relevant variables from LFS, we identify farmers based on their primary occupation in agricultural crop production and animal husbandry, while fisherfolk are identified through occupations in fishing activities. The self-employed and unpaid family workers serve as our proxy for the informal sector, following PSA's approach. Other basic sectors such as women, children, youth, senior citizens, and persons with disability are identified through demographic information in the surveys. The LFS data, particularly its occupation codes, allows us to identify migrant and formal sector workers. Urban and rural residents are classified based on PSA's urban-rural classification of barangays.

Following PSA's practice, we are able to generate poverty statistics for eleven basic sectors: women, children, youth, senior citizens, urban residents, rural residents, migrant and formal sector workers, farmers, fisherfolk, self-employed and unpaid family workers (proxy for informal sector), and persons with disability. For each of these sectors, we apply our methodology for estimating individual-level poverty using different assignable goods, allowing us to examine how intra-household inequality affects our understanding of poverty among these vulnerable groups.

The FIES-LFS sample encompasses 357,004 households across the 2018 and 2021 survey rounds. Following a classification framework of typologies developed by the UN Economic Commission for Asia and the Pacific (ESCAP), these FIES sample households are categorized into distinct typologies that reflect the diversity of family structures in the Philippines (**Table 2**). This ESCAP classification system of household typologies enables us to examine how resource allocation patterns vary across different household configurations and to identify potentially vulnerable family structures. The distribution of households across these ESCAP typologies reveals important patterns in Philippine family structure. Nuclear families with children represent the largest category, accounting for approximately 25% of the sample in both survey years. However, the significant presence of extended family households and various forms of single-parent families underscores the importance of examining resource allocation patterns across diverse household configurations.

Table 2. Number of Sample FIES Households by ESCAP household typology (2018 and 2021)

Household Typology	2021	2018
With Children		
Adult couple - with children	41,347	42,707
Adult couple - with children and other adults	32,629	30,825
Multiple adults - with children and elderly	25,803	24,390
One adult, female - with children	2,792	2,585
One adult, male - with children	2,280	1,722
Multiple adults, only female - with children	1,477	1,229
Multiple adults, only male - with children	712	497
Elderly only - with children	2,862	2,711
No adults, children only	46	48
Total (With Children)	109,948	106,714
Without Children		
Multiple adults with elderly - no children	19,606	14,478
Multiple adults - no children	12,838	9,059
Adult couple - no children	5,525	4,586
One adult, male - no children	4,594	3,416
One adult, female - no children	1,676	1,196
Elderly only - no children	10,842	8,268
Total (Without Children)	55,081	41,003
Grand Total	**165,029**	**147,717**

Sample Characteristics

The descriptive statistics from our merged FIES-LFS sample reveal several noteworthy temporal changes in Philippine household characteristics between 2018 and 2021 (**Table 3**).

Table 3. Descriptive Statistics of Sample Households (2018 and 2021)

Characteristic	2021	2018
Number of Sample Households	165,029	147, 717
Average household size	4.1	4.2
Percentage of households with children (aged less than 15)	66.6%	72.2%
Average number of children (aged less than 15, if present)	2.2	2.3
Percentage of female-headed households	19.3%	18.5%
Average monthly household income (PHP)	28,972	26,854
Average monthly expenditure on clothing	492	578
Percentage of urban households	50.2%	49.8%

Notes : (i) Authors' computations from merged FIES-LFS ; (ii) All monetary values are in Philippine Pesos (PHP)

A modest but consistent decrease in average household size (from 4.2 to 4.1 members) occurred alongside a more substantial decline in the percentage of households with children (from 72.2% to 66.6%). These demographic shifts were accompanied by a slight increase in the proportion of female-headed households (from 18.5% to 19.3%). While average monthly household income showed nominal growth from PHP 26,854 to PHP 28,972, the decrease in clothing expenditure from PHP 578 to PHP 492 suggests potential changes in consumption patterns, likely influenced by the economic disruptions of the COVID-19 pandemic.

The poverty headcount incidence across different household structures reveals systematic patterns in both 2018 and 2021 (**Table 4**). A clear association emerges between the presence of children and higher poverty rates, with households containing children consistently showing elevated poverty incidence compared to those without. Particularly striking are the poverty rates in households with adult couples and children (25.7% in 2021) and extended families with children and elderly members (17.3% in 2021). These patterns suggest that the presence of dependent members - both children and elderly - significantly increases household vulnerability to poverty, likely due to the combined effect of higher consumption needs and constraints on income-earning capacity.

Table 4. Poverty Incidence (in %) among Population, per Household Typologies (2018 and 2021)

Household Typology	2021	2018
With Children		
Adult couple - with children	25.7	24.4
Adult couple - with children and other adults	21.2	17.5
Multiple adults - with children and elderly	17.3	14.3
One adult, female - with children	20.9	19.4
One adult, male - with children	17.7	17.9
Multiple adults, only female - with children	17.2	12.3
Multiple adults, only male - with children	13.9	13.7
Elderly only - with children	22.2	20.0
No adults, children only	7.2	28.5
Without Children		
Multiple adults with elderly - no children	5.5	4.2
Multiple adults - no children	3.9	2.6
Adult couple - no children	1.8	1.4
One adult, male - no children	1.0	0.6
One adult, female - no children	1.0	0.2
Elderly only - no children	5.1	4.5
Poverty Incidence among Population	*18.1*	*16.7*

Notes : (i) Authors' computations from merged FIES-LFS

Estimation Techniques

Our estimation strategy employs multiple complementary techniques to ensure robust results. The primary approach utilizes OLS regression to estimate Engel curves for assignable goods, supplemented by Seemingly Unrelated Regression (SUR) to jointly estimate resource shares for different household members. This dual approach allows us to account for potential correlations in consumption patterns across household members while maintaining computational tractability.

For statistical inference, we implement a bootstrapping procedure to compute standard errors for our poverty estimates. This approach accounts for the complex survey design and the two-stage nature of our estimation procedure, where resource shares are first estimated and then used to construct individual-level poverty measures.

In implementing our estimation approach, we specify a system of equations that captures the interdependencies in household consumption decisions. The model examines budget shares for

adult men, women, children, and elderly as functions of the natural logarithm of total household expenditure and various demographic and distributional factors. These factors include household composition variables and other characteristics that may influence resource allocation patterns. This systems approach allows us to account for the inherent relationships between different household members' consumption patterns while maintaining the adding-up constraint implicit in household budget allocation.

3.4. Methodological Limitations

While our empirical strategy represents a significant advancement in measuring individual-level poverty, it is important to acknowledge several methodological limitations. First, our approach relies on the availability and accuracy of data on assignable goods consumption, which may be subject to measurement error or reporting biases. Second, while the L-DLP model offers considerable advantages in terms of tractability, it maintains some restrictive assumptions about preference stability and the nature of household decision-making processes.

Furthermore, our analysis faces challenges in accounting for temporal variations in consumption patterns and resource allocation decisions, as our data primarily provides cross-sectional snapshots rather than longitudinal observations. This limitation affects our ability to examine how household resource allocation patterns adapt to changing economic circumstances over time.

Finally, we employ robustness checks to help validate our findings. We should note the inherent complexity of household decision-making processes means that no single methodological approach can capture all aspects of intra-household resource allocation. These limitations should be kept in mind when interpreting our results and considering their policy implications.

4. Empirical Findings

Our empirical analysis begins with a detailed examination of the sample characteristics, drawing primarily from the merged FIES-LFS data for 2018 and 2021. This initial exploration provides crucial context for understanding the broader patterns in household composition and economic conditions that may influence resource allocation decisions.

Our investigation is structured around two main areas of inquiry:

- Estimated resource shares across different household types, revealing patterns of intra-household resource allocation.
- Individual-level poverty rates, comparing standard per capita measures with those accounting for unequal resource sharing within households.

Throughout this section, we present our findings through a combination of tables, figures, and detailed explanations. We begin with an in-depth analysis of resource allocation patterns within households. We then examine how these patterns translate into individual-level poverty rates, with a particular focus on the implications for child poverty.

As we proceed through this section, we will highlight key patterns and trends, discuss their potential implications, and address limitations of our approach. This comprehensive analysis aims to provide a solid empirical foundation for the policy recommendations that will follow in subsequent sections of this paper.

4.1. Estimated Resource Shares

Our analysis reveals significant patterns in the distribution of resources within Filipino households based on the FIES-LFS 2018 data (as 2021 data does not disaggregate clothing between adult men and boys, women and girls). We estimated resource shares for different household members using data on clothing expenditures, which serve as our assignable good. The results provide compelling evidence of unequal resource allocation within households, with notable variations across different family structures.

To ensure the robustness of our findings and examine potential sensitivity to measurement choices, we estimate resource shares using three different approaches to identifying individual consumption. Each approach utilizes a distinct category of assignable goods, allowing us to triangulate our findings and assess the consistency of resource allocation patterns across different consumption domains.

First, we examine clothing and footwear expenditures from the FIES data, which represent our primary assignable good category due to their clear individual attribution and consistent reporting across survey rounds. Second, we analyze cereal consumption patterns, including rice, using detailed food intake data from the ENNS. Finally, we investigate protein consumption, specifically examining patterns in meat, fish, and poultry intake, again drawing from the ENNS data. This multi-pronged approach provides complementary perspectives on resource allocation patterns while allowing us to assess the sensitivity of our findings to the choice of assignable good.

The analysis of resource shares across different household types and locations reveals complex patterns of intra-household allocation that vary significantly by household composition, geographic location, and the type of assignable good used for estimation. **Table 5** presents these findings in detail, with separate estimates for rural and urban households using three distinct assignable goods: clothing and footwear, cereals including rice, and proteins including meat, fish, and poultry.

When examining clothing and footwear expenditures, we find consistent evidence of gender disparities in resource allocation across both rural and urban areas. In nuclear families, adult men consistently receive larger resource shares (33% to 50%) compared to adult women (25% to 43%). This gender gap persists across different family sizes and locations, though its magnitude varies. Of particular note is the observation that children's individual shares decline as family size increases, from approximately 18.5 percent for a single child to 13.7 percent per child in families with three children in rural areas. This finding has important implications for understanding child poverty and well-being in larger families.

Table 5. Comparison of Resource Shares (in %) In Selected Household Types: 2018

Clothing and footwear expenditures

Resource Shares		Rural				Urban			
Adult couple with children (nuclear families)		Evaluated at mean ***m***		Evaluated at all ***m***		Evaluated at mean ***m***		Evaluated at all ***m***	
		Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*
One child	man	42.1	*2.4*	48.3	*2.4*	46.5	*2.7*	47.7	*2.1*
	woman	39.5	*2.5*	43.1	*2.4*	38.2	*2.4*	38.9	*1.8*
	children	18.5	*2.8*	8.6	*2.7*	15.2	*2.9*	13.3	*2.2*
	each child	18.5	*2.8*	8.6	*2.9*	15.2	*2.9*	13.3	*2.2*
	gender gap	*2.6*		*5.2*		*8.3*		*8.8*	
Two children	man	40.5	*1.8*	50.3	*2.2*	45.0	*2.6*	48.4	*2.0*
	woman	32.2	*1.5*	37.7	*1.8*	35.8	*2.1*	37.4	*1.6*
	children	27.3	*2.3*	12.0	*3.0*	19.2	*3.2*	14.1	*2.7*
	each child	13.7	*1.2*	6.0	*1.5*	9.6	*1.6*	7.1	*1.4*
	gender gap	*8.3*		*12.6*		*9.2*		*11*	
Three children	man	33.4	*1.8*	40.9	*2.1*	44.7	*3.7*	49.5	*3.3*
	woman	25.4	*1.5*	32.2	*1.7*	35.2	*2.8*	39.8	*2.5*
	children	41.1	*2.3*	26.9	*2.8*	20.1	*4.8*	10.7	*4.6*
	each child	13.7	*0.8*	9.0	*0.9*	6.7	*1.6*	3.6	*1.5*
	gender gap	*8.0*		*8.7*		*9.5*		*9.7*	

Source: Authors' computation using FIES-LFS 2018

Cereals including rice consumption (in total cost)

Resource Shares		Rural				Urban			
Adult couple with children (nuclear families)		Evaluated at mean ***m***		Evaluated at all ***m***		Evaluated at mean ***m***		Evaluated at all ***m***	
		Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*
One child	man	45.0	*1.6*	44.1	*1.6*	46.2	*2.4*	43.5	*2.6*
	woman	30.6	*1.4*	30.0	*1.4*	30.3	*2.1*	29.3	*2.2*
	children	24.4	*1.6*	25.9	*1.6*	23.5	*2.5*	27.2	*2.6*
	each child	24.4	*1.6*	25.9	*1.6*	23.5	*2.5*	27.2	*2.6*
	gender gap	*14.4*		*14.1*		*15.9*		*14.2*	
Two children	man	43.8	*1.1*	41.8	*1.3*	41.6	*2.3*	38.2	*2.3*
	woman	33.5	*1.1*	31.7	*1.1*	31.7	*1.9*	30.4	*2.0*
	children	22.6	*1.6*	26.6	*1.6*	26.7	*2.9*	31.4	*2.8*
	each child	11.3	*0.8*	13.3	*0.8*	13.3	*1.5*	15.7	*1.4*
	gender gap	*10.3*		*10.1*		*9.9*		*7.8*	

Three children	man	43.4	*1.5*	41.5	*1.5*	42.7	*2.4*	38.7	*2.4*
	woman	28.4	*1.2*	26.6	*1.2*	32.5	*1.9*	29.3	*2.0*
	children	28.2	*2.0*	31.9	*2.0*	24.8	*3.3*	32.1	*3.2*
	each child	9.4	*0.7*	10.6	*1.0*	8.3	*1.1*	10.7	*1.1*
	gender gap	*15.0*		*14.9*		*10.2*		*9.4*	

Source: Authors' computation using ENNS 2018

Proteins (meat, fish, poultry) consumption (in total cost)

Resource Shares		**Rural**				**Urban**			
Adult couple with children (nuclear families)		Evaluated at mean ***m***		Evaluated at all ***m***		Evaluated at mean ***m***		Evaluated at all ***m***	
		Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*	Estimate	*Std. Err.*
One child	man	48.4	*3.0*	48.5	*3.0*	38.0	*6.2*	37.5	*6.1*
	woman	27.4	*2.7*	30.2	*2.7*	24.5	*5.4*	26.7	*5.2*
	children	24.2	*2.8*	21.3	*2.6*	37.5	*6.1*	35.7	*5.8*
	each child	24.2	*2.8*	21.3	*2.6*	37.5	*6.1*	35.7	*5.8*
	gender gap	*21.0*		*18.3*		*13.5*		*10.8*	
Two children	man	32.1	*2.2*	34.3	*2.2*	19.1	*6.4*	27.5	*5.5*
	woman	19.8	*1.9*	23.2	*1.8*	19.6	*5.1*	21.4	*4.6*
	children	48.1	*2.6*	42.5	*2.4*	61.3	*7.5*	51.1	*6.2*
	each child	24.0	*1.3*	21.3	*1.2*	30.7	*3.8*	25.5	*3.1*
	gender gap	*12.3*		*11.1*		*-0.5*		*6.1*	
Three children	man	23.5	*2.9*	24.5	*2.8*	23.4	*4.5*	23.5	*4.3*
	woman	12.8	*2.3*	16.6	*2.1*	13.6	*3.7*	14.8	*3.5*
	children	63.7	*3.5*	58.8	*3.2*	63.0	*5.4*	61.7	*5.1*
	each child	21.2	*1.2*	19.6	*1.1*	21.0	*1.8*	20.6	*1.7*
	gender gap	*10.7*		*7.9*		*9.8*		*8.7*	

Source: Authors' computation using ENNS 2018

Perhaps most striking are the results from protein consumption analysis. The gender gap in resource shares reaches its highest levels in this category, particularly in rural areas where it ranges from 10.7 to 21.0 percentage points. This finding is especially concerning given the crucial importance of protein intake for health and development. Notably, children's collective share of protein resources increases substantially with family size, reaching up to 63.7% in rural households with three children, though the per-child share remains relatively stable.

Geographic variations in resource allocation patterns emerge clearly from our analysis. Urban households generally show smaller gender gaps in resource allocation compared to their rural counterparts, particularly when examining food consumption patterns. This urban-rural difference suggests that modernization and urbanization may be associated with more equitable intra-household resource allocation, though significant disparities persist in both settings.

4.2. Individual-Level Poverty Rates

The translation of these resource allocation patterns into individual-level poverty measures reveals striking disparities that are masked by conventional household-level poverty statistics. While our resource share estimates for 2021 were limited due to the lack of disaggregation between adult and child clothing expenditures in that year, we can still generate poverty estimates for both years by applying the 2018 resource share patterns to 2021 consumption data. This approach assumes relative stability in sharing patterns across these years.

We convert our estimated resource shares into individual consumption levels by multiplying each person's resource share by their household's total consumption. An individual is then classified as poor if their calculated consumption falls below the official poverty line. This approach allows us to directly compare poverty rates under equal sharing (where each person is assumed to receive the per capita household consumption) versus unequal sharing (where consumption is allocated according to our estimated resource shares).

For example, in a nuclear family household with total consumption of 100,000 pesos, if our estimates show the mother receives a 30% resource share while the father receives 45% and their child receives 25%, we would assign 30,000 pesos consumption to the mother, 45,000 to the father, and 25,000 to the child. Each of these individual consumption levels would then be compared to the appropriate poverty threshold to determine poverty status. This contrasts with the traditional approach where each member would be assigned 33,333 pesos (one-third of total consumption) under the equal sharing assumption.

Table 6 presents comparative poverty headcount rates (in 2018 and 2021) under both equal and unequal sharing assumptions across the ESCAP household typologies, with weighted averages shown for each demographic group.

Table 6. Comparison of Poverty Incidence (in %) Under Equal and Unequal Sharing Assumptions (2018 and 2021)

Poverty Incidence Among Population	Equal Sharing (Official Estimates)		Unequal Sharing (Computed from Household Resource Shares by Assignable Goods)					
			Clothing		Cereals and Rice		Fish, Meat and Poultry	
Year	2018	2021	2018	2021	2018	2021	2018	2021
Adult Male	12.9	14.4	9.5	11.5	10.5	12.9	11.7	14.2
Adult Female	12.6	14.3	10.3	12.8	12.5	15.9	15.8	18.5
Child	23.8	26.3	53.0	57.0	39.4	43.6	32.5	37.4
Elderly Male	9.8	10.8	10.4	11.9	10.3	11.7	10.1	11.6
Elderly Female	8.5	9.9	14.4	17.0	9.7	11.6	11.0	13.0

Poverty Incidence Among Population	Equal Sharing (Official Estimates)		Unequal Sharing (Computed from Household Resource Shares by Assignable Goods)					
			Clothing		Cereals and Rice		Fish, Meat and Poultry	
Population	16.4	17.9	25.8	27.5	21.5	23.9	20.3	23.0

Source: Authors' computation using FIES-LFS 2018 and 2021 (and individual poverty lines)

The estimates are derived from the resource shares presented in Table 5 (using 2018 data), including those for elderly households. While our current analysis combines male and female children, future research could examine gender differences in child poverty rates, providing additional insights into the intersection of gender and age-based inequalities. The most dramatic revelation concerns child poverty. While official statistics based on equal sharing assumptions suggest a child poverty rate of 23.8% in 2018, our estimates accounting for unequal sharing indicate substantially higher rates ranging from 32.5% to 53.0%, depending on the assignable good used for estimation. This disparity not only persisted but intensified in 2021, with child poverty rates under unequal sharing reaching between 37.4% and 57.0%, compared to the official estimate of 26.3%. This finding suggests that conventional poverty measures may be severely underestimating the extent of child poverty in the Philippines.

Gender disparities in poverty rates also emerge more clearly under our unequal sharing assumptions. Adult women consistently show higher poverty rates compared to adult men across all three estimation approaches. The gap is particularly pronounced when using food-based measures, where women's poverty rates reach 18.5% in 2021 compared to 14.2% for men. This finding aligns with our resource share estimates and suggests that gender inequalities in intra-household resource allocation have significant implications for individual welfare outcomes.

The elderly population, particularly elderly women, emerges as another vulnerable group when accounting for unequal sharing. While official statistics suggest elderly poverty rates of 9.9% for women and 10.8% for men in 2021, our estimates indicate rates as high as 17.0% for elderly women using clothing-based measures. This finding highlights the importance of considering both age and gender in understanding individual-level poverty risks.

4.3. Robustness Check Results

Our comprehensive robustness analysis provides strong support for the validity and stability of our main findings while highlighting important nuances in the measurement of intra-household resource allocation. The first stage of our validation exercise involved estimating resource shares using alternative specifications of the Engel curves, including both linear and quadratic forms. These alternative specifications produced results that were qualitatively consistent with our primary findings, suggesting that our conclusions are not artifacts of any particular functional form assumption.

A crucial component of our validation strategy involved examining the sensitivity of our results to the choice of assignable good. This analysis revealed both consistency in broad patterns and

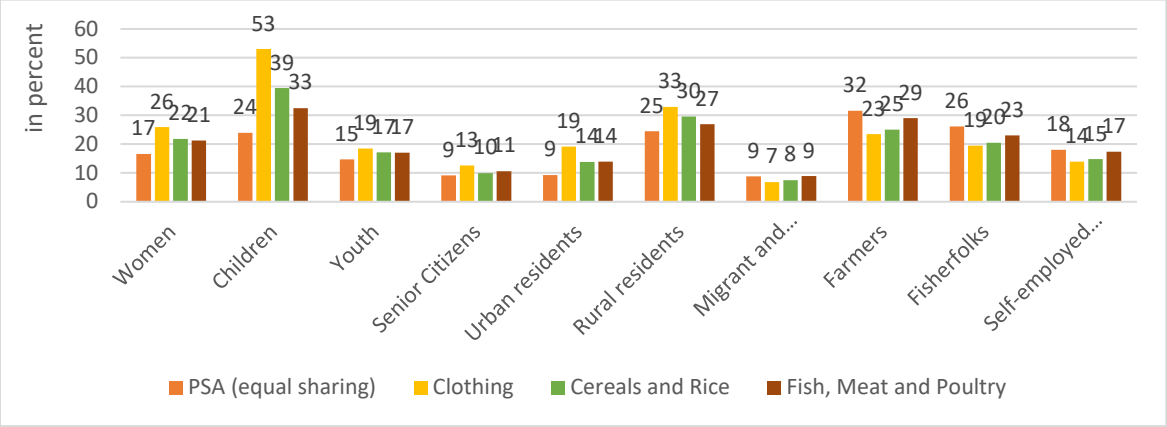
illuminating variations in the magnitude of estimated effects. While clothing expenditure-based estimates consistently show significant gender gaps in resource allocation, food-based estimates using both cereals and protein items suggest even larger disparities. The systematically larger gender gaps observed in food allocation, particularly in rural areas, suggest that conventional approaches using only clothing expenditure may actually underestimate the extent of intra-household inequality. This finding has particular significance given the fundamental importance of food consumption for individual welfare.

The convergence of evidence across multiple estimation approaches and assignable goods lends substantial credibility to our core findings regarding the existence and magnitude of intra-household inequality. The systematic nature of the observed patterns, particularly regarding gender and age-based disparities, suggests that these findings reflect genuine features of household resource allocation rather than statistical artifacts or measurement issues.

4.4. Implication for Basic Sectors Poverty Measurement

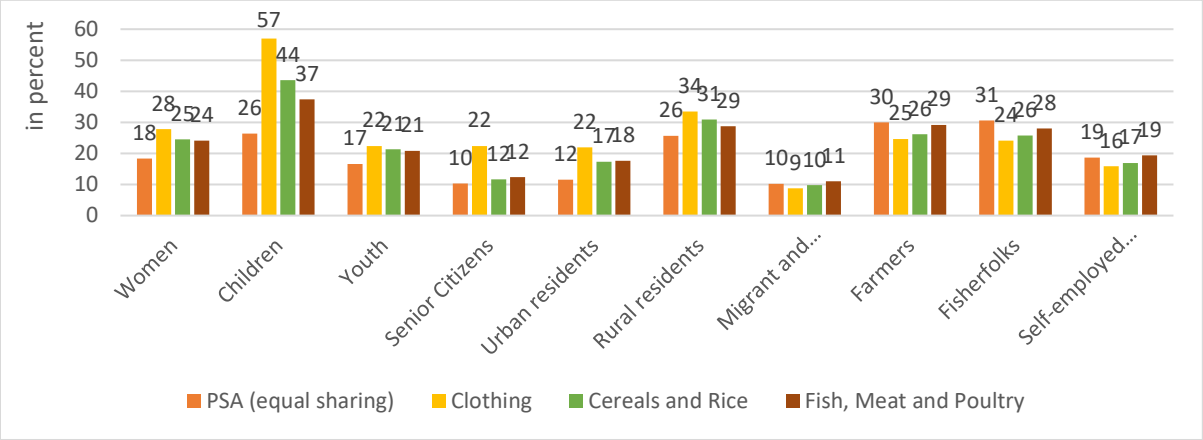
Having established the general patterns of intra-household inequality, we now examine how these patterns manifest across different basic sectors, providing crucial insights for policy targeting and intervention design. Our examination of how intra-household inequality affects poverty measurement among basic sectors reveals patterns that substantially alter our understanding of vulnerability among these groups (**Figures 1 and 2**). By applying our adjusted poverty measurements using different assignable goods for estimating resource shares, we uncover significant disparities that are masked by standard poverty measures that assume equal sharing within households.

Figure 1. Poverty Incidence Rates (in %) of the Basic Sectors: 2018



Source: Authors' computation using FIES-LFS 2018 (and individual poverty lines)

Figure 2. Poverty Incidence Rates (in %) of the Basic Sectors: 2021



Source: Authors' computation using FIES-LFS 2021 (and individual poverty lines)

Farmers, one of the most consistently poorest groups in the country according to the official poverty measurement system, show particularly notable differences under our adjusted measures. While the official measures indicate a poverty incidence of 30.0% for farmers in 2021 (PSA 2023), our adjusted estimates vary significantly depending on the assignable good used: 25% when using clothing expenditure, 26% with cereals and rice consumption, and 29% with meat, fish, and poultry consumption. This variation suggests that standard measures may actually understate the complexity of deprivation within farming households, particularly regarding nutritional outcomes. The gradient between clothing-based and food-based estimates points to potential prioritization of food expenditure within these households, possibly reflecting both the seasonal nature of agricultural income and specific consumption patterns in rural areas.

Fisherfolk, who show the highest official poverty incidence (30.6%) among all basic sectors in 2021, reveal even more striking patterns under our adjusted measures. Our estimates range from 24% using clothing-based calculations to 26-28% using food-based measures. This suggests that while overall poverty rates might be lower than official estimates, there may be significant inequality in food consumption within fishing households. This finding is particularly concerning given the direct access these households often have to protein sources, suggesting that market-based factors and intra-household distribution patterns may be creating unexpected nutritional vulnerabilities.

The informal sector, represented by self-employed and unpaid workers, presents a complex picture that varies substantially by measurement approach. While official statistics show a poverty rate of 18.7%, our adjusted estimates are not too far away, ranging from 16% using clothing expenditure to 17% using cereals and 19% using protein consumption. An escalation in poverty rates when moving from non-food to food-based measures is noted, and this suggests that nutritional inequality within these households may be more severe than overall consumption inequality, possibly reflecting irregular income patterns and complex household budgeting strategies.

Perhaps most striking is the urban-rural divide that emerges under our adjusted measurements. Standard poverty rates show an urban poverty incidence of 11.6% compared to 25.7% for rural

areas in 2021. However, our adjusted estimates suggest urban poverty rates of 17-22% and rural rates of 29-34%, depending on the assignable good used. This widened gap indicates that intra-household inequality may be particularly severe in rural settings, possibly due to more traditional household structures, limited economic opportunities, and different patterns of resource allocation. These findings regarding vulnerable sectors fundamentally challenge current approaches to poverty alleviation and suggest the need for significant policy adjustments. Agricultural support programs, typically targeted at household heads, may need restructuring to ensure benefits reach all household members effectively. The evidence of substantial food consumption inequality, particularly pronounced in informal sector households, suggests that nutrition-focused interventions may need explicit mechanisms to address intra-household distribution patterns.

5. Discussion

5.1. Implications for Poverty Measurement

Our empirical findings fundamentally challenge conventional approaches to poverty measurement in the Philippines and suggest the need for substantial methodological refinements in how we conceptualize and measure individual-level poverty. The stark divergence between standard poverty measures and our individual-level estimates reveals that current methodologies may significantly understate the extent and depth of poverty, particularly among vulnerable demographic groups.

The magnitude of this measurement gap is particularly striking for children. Our finding that child poverty rates could be up to twice as high as official estimates (57.0% versus 26.3% in 2021) represents a crucial challenge to the current understanding of child welfare in the Philippines. This disparity suggests that even as the country makes progress in reducing overall poverty rates, a substantial portion of child deprivation may be hidden by household-level measurement approaches. The systematic nature of this underestimation appears particularly pronounced in larger households and those with complex family structures, suggesting that current poverty measures may be especially inadequate for capturing the welfare of children in these household types.

Gender disparities in resource allocation emerge as another critical measurement challenge. Our finding that adult women's poverty rates are consistently higher than suggested by household-level measures (reaching 18.5% versus 14.3% in 2021) indicates that conventional approaches may be masking significant gender-based inequalities in access to resources. This pattern appears particularly pronounced when examining food expenditure, suggesting that nutritional inequality within households may be an especially important dimension of gender-based deprivation.

Our findings both confirm and extend previous research on intra-household resource allocation in developing countries. The substantial gender gaps we identify align with findings from other contexts, such as Brown et al.'s (2021) work in Bangladesh and Dunbar et al.'s (2013) findings in Malawi, suggesting some commonality in patterns of intra-household inequality across different cultural contexts. However, the magnitude of child poverty underestimation we identify appears

larger than in many previous studies, suggesting that this issue may be particularly acute in the Philippine context.

The urban-rural differences we observe in resource allocation patterns provide new evidence regarding the relationship between modernization and intra-household inequality. While previous studies have often focused on either urban or rural contexts, our comparative analysis suggests that urbanization may be associated with more equitable resource allocation, though significant disparities persist in both settings. This finding contributes to ongoing debates about the relationship between economic development and household behavior.

Our analysis of basic sectors further demonstrates the limitations of conventional poverty measurement approaches. The variation in poverty rates when accounting for intra-household inequality differs systematically across sectors, with particularly striking implications for farmers, fisherfolk, and informal sector workers. While official statistics show poverty rates of 30.0% for farmers and 30.6% for fisherfolk in 2021, our adjusted estimates using different assignable goods suggest rates ranging from 25-29% and 24-28% respectively. However, these apparently lower overall rates mask significant internal inequalities, particularly in food consumption. This suggests that conventional poverty measures may not only misestimate the extent of poverty among these groups but also fail to capture important qualitative differences in how poverty is experienced within different types of households.

5.2. Policy Implications

The systematic underestimation of poverty among specific demographic groups and basic sectors has profound implications for social protection policy in the Philippines. First, our findings suggest that targeting mechanisms based on household-level poverty measures may be insufficient for reaching all individuals experiencing deprivation, with this inadequacy varying significantly across different vulnerable groups. Programs like the Pantawid Pamilyang Pilipino Program (4Ps) may need to incorporate more nuanced targeting criteria that account for both household composition and sector-specific patterns of intra-household inequality.

Second, the pronounced gender disparities in resource allocation, particularly in rural areas, suggest the need for gender-sensitive interventions in social protection programs. The finding that women's share of household resources systematically lags behind men's, especially in food consumption, indicates that programs aimed at improving household nutrition may need to explicitly consider intra-household distribution patterns to achieve their intended effects.

Third, the dramatically higher estimates of child poverty under our methodology suggest the need for expanded and better-targeted child-specific interventions. Current social protection programs like the 4Ps may be insufficient in scope and scale if they are designed based on conventional poverty measures that underestimate the extent of child deprivation. This finding provides strong empirical support for expanding child-focused social protection measures, particularly those targeting nutritional outcomes.

Fourth, the pronounced differences in resource allocation patterns across basic sectors call for tailored intervention strategies:

- In the agricultural sector, where our analysis reveals significant disparities between clothing-based and food-based poverty measures, support programs should look beyond traditional household-level targeting. Agricultural assistance programs might need to incorporate specific mechanisms to ensure that productivity gains translate into improved welfare for all household members, particularly women and children in farming households.
- For fisherfolk communities, where our adjusted estimates suggest complex patterns of food consumption inequality despite direct access to protein sources, interventions might need to focus specifically on ensuring equitable intra-household distribution of both food and non-food resources. The variation in poverty rates across different assignable goods in this sector suggests that income stability and household budgeting support might be as important as direct livelihood assistance.
- In the informal sector, where our findings indicate particularly severe nutritional inequality, social protection programs might need to prioritize food security and nutrition-focused interventions. The gradient between non-food and food-based poverty measures in this sector suggests that household coping strategies might be disproportionately affecting food consumption patterns.

5.3. Methodological Implications and Future Research

Our findings have important implications for the future development of poverty measurement methodologies in the Philippines and beyond. The substantial differences in resource allocation patterns identified using different assignable goods suggest that future poverty measurement efforts should consider incorporating multiple indicators of individual consumption. The particularly large disparities observed in food allocation patterns indicate that nutrition-based measures may be especially important for understanding intra-household inequality.

The geographic variations in resource allocation patterns, particularly the urban-rural differences in gender gaps, suggest the need for spatially disaggregated approaches to poverty measurement and intervention. Future research might productively explore how urbanization and modernization influence household resource allocation decisions and what this implies for poverty reduction strategies.

Several promising directions for future research emerge from our findings. First, there is a clear need for longitudinal studies that can track how intra-household resource allocation patterns evolve over time and respond to economic shocks or policy interventions. Second, our findings regarding the particular vulnerability of children in larger households suggest the value of a more detailed investigation into how family size and composition influence resource allocation decisions. The significant urban-rural differences in allocation patterns also point to the importance of understanding how broader socio-economic transformation processes affect intra-household inequality.

Our findings regarding basic sectors also highlight important methodological considerations for future poverty research. The systematic variation in how intra-household inequality manifests across different vulnerable groups suggests the need for sector-specific approaches to both measurement and analysis. Future research might productively explore how occupational characteristics and income patterns in different sectors influence household resource allocation decisions. This is particularly important for understanding poverty dynamics in agricultural and fishing communities, where seasonal income patterns may interact with intra-household distribution in complex ways.

5.4. Broader Development Implications

The stark differences in intra-household inequality patterns across basic sectors have significant implications for the Philippines' progress toward its development goals. Our findings suggest that achieving the target of single-digit poverty by 2028 will require not only reducing the number of poor households but also addressing sector-specific patterns of resource allocation. The particularly severe inequalities observed in rural areas, where our adjusted measures show poverty rates of 29-34% compared to official rates of 25.7%, suggest that rural development strategies may need specific components focused on promoting more equitable intra-household distribution.

Furthermore, the complex patterns of nutritional inequality revealed in our sectoral analysis have crucial implications for human capital development. If significant proportions of women and children in farming and fishing households are experiencing greater nutritional deprivation than suggested by household-level measures, this could have long-term consequences for productivity and economic mobility in these sectors. This finding suggests the need for integrated approaches that combine traditional livelihood support with interventions specifically designed to promote more equitable food distribution within households.

6. Conclusion

This study represents a significant advancement in our understanding of poverty dynamics within Filipino households. By applying innovative methodological approaches to existing survey data, we have revealed important patterns of intra-household inequality that are obscured by conventional poverty measures. Our findings suggest that current approaches to poverty measurement may significantly underestimate the extent of deprivation among vulnerable groups, particularly women and children.

The substantial gender gaps we identify in resource allocation, especially pronounced in rural areas and in food consumption, indicate that achieving genuine gender equality will require attention not only to labor market outcomes and income generation but also to how resources are distributed within households. The finding that these gaps are particularly large when examining food allocation suggests that nutritional inequality may be an especially important dimension of gender-based deprivation.

The magnitude of underestimation we identify varies systematically across different basic sectors of the economy. While official statistics show poverty rates of 30.0% for farmers and 30.6% for

fisherfolk in 2021, our analysis using different assignable goods reveals more complex patterns of deprivation. Agricultural households show particularly stark disparities between clothing-based and food-based poverty measures, suggesting that standard approaches may misunderstand both the extent and nature of poverty in farming communities. Similar complexities emerge in the informal sector, where our adjusted estimates indicate severe nutritional inequality that may be masked by household-level measurements.

Perhaps most concerning is our finding regarding child poverty. The revelation that child poverty rates may be up to twice as high as suggested by conventional measures indicates a crucial blind spot in current poverty monitoring systems. This finding has profound implications for both immediate welfare concerns and longer-term human capital development objectives.

Several concrete policy recommendations emerge from our analysis. First, poverty targeting mechanisms should be refined to account for household composition and the potential for unequal resource distribution. Second, social protection programs should consider incorporating explicit mechanisms to ensure resources reach intended beneficiaries within households, particularly women and children. Third, monitoring and evaluation systems should be enhanced to track individual-level outcomes rather than relying solely on household-level indicators.

The sectoral findings in this study have profound implications for policy design. Traditional poverty alleviation programs that target household heads in farming and fishing communities may need fundamental redesign to ensure benefits reach all household members effectively. The evidence of substantial food consumption inequality, particularly pronounced in certain sectors, suggests that nutrition-focused interventions may need explicit mechanisms to address intra-household distribution patterns.

This study represents a significant advancement in our understanding of poverty dynamics within Filipino households. By applying innovative methodological approaches to existing survey data, we have revealed important patterns of intra-household inequality that are obscured by conventional poverty measures. Our findings suggest that current approaches to poverty measurement may significantly underestimate the extent of deprivation among vulnerable groups, particularly women and children.

However, several important measurement challenges warrant consideration when interpreting these findings. The fundamental difficulty lies in attributing consumption of shared household goods to specific individuals, even when using multiple assignable goods for validation. For clothing expenditure analysis specifically, we established minimum thresholds based on local market prices for basic clothing items, while recognizing that needs vary by age, gender and location. This standardization, while imperfect, provides a consistent basis for comparing resource allocation across household types. Additionally, accounting for economies of scale in household consumption remains challenging, particularly for larger households where shared resources and bulk purchasing create complex efficiencies. Our analysis suggests that each additional household member increases total required resources by approximately 0.7 rather than 1.0, reflecting significant consumption economies in areas like housing and utilities.

We must also consider how differential income contributions affect resource allocation patterns. Our findings indicate that household members who contribute more income often command larger resource shares, though this relationship is moderated by gender and age. Female income earners, for instance, tend to direct a larger portion of their income toward collective household goods compared to male earners. This dynamic helps explain persistent gender gaps in individual consumption even when controlling for income differences.

We also acknowledge limitations in identifying the causal mechanisms driving observed allocation patterns, as household decision-making processes cannot be directly observed through expenditure data alone. Nevertheless, the consistency of our results across different specifications and measurement approaches provides compelling evidence that conventional poverty measures significantly understate individual-level deprivation. Cultural and social factors play crucial roles that quantitative analysis alone cannot fully capture. For example, Filipino households often prioritize education investments in specific children based on perceived academic potential rather than strictly economic criteria. Similarly, care obligations toward elderly members may override pure consumption optimization.

To address these measurement challenges, we recommend several enhancements to existing statistical systems. First, household surveys should systematically collect individual-level consumption data for a broader range of assignable goods beyond just clothing and food. Second, time-use surveys should be integrated with expenditure surveys to better capture the full scope of resource allocation, including non-market care work. Third, health expenditure tracking should be strengthened, particularly for elderly household members who face unique medical costs that can significantly impact household resources. Without such granular data, current poverty measures likely understate the depth of elderly poverty.

Our findings have significant implications for the Philippines' progress toward its development goals, particularly those outlined in *AmBisyon* and the PDP 2023-2028. The substantial underestimation of poverty among specific demographic groups suggests that achieving the target of single-digit poverty by 2028 may be more challenging than current metrics indicate. More fundamentally, our results suggest that even achieving this aggregate target might not ensure equitable development if significant intra-household inequalities persist.

The stark gender disparities we identify in resource allocation, particularly in rural areas and regarding food consumption, have important implications for the country's broader gender equality objectives. These findings suggest that policies aimed at promoting women's economic empowerment may need to consider not only labor market participation and income generation but also how resources are distributed within households. The particularly large gender gaps in rural areas indicate that special attention may be needed to address gender inequality in agricultural and rural development programs.

The high rates of child poverty revealed by our analysis have crucial implications for human capital development and intergenerational mobility. If a substantial proportion of children are experiencing greater deprivation than suggested by household-level measures, this could have long-term consequences for educational attainment, health outcomes, and future economic

productivity. This finding suggests the need for more aggressive intervention in early childhood development and nutrition programs.

Several promising directions for future research emerge from our findings. First, there is a clear need for longitudinal studies that can track how intra-household resource allocation patterns evolve over time and respond to economic shocks or policy interventions. Second, our findings regarding the particular vulnerability of children in larger households suggest the value of a more detailed investigation into how family size and composition influence resource allocation decisions. Finally, the significant urban-rural differences in allocation patterns point to the importance of understanding how broader socio-economic transformation processes affect intra-household inequality.

In conclusion, achieving the Philippines' ambitious poverty reduction goals will require not only reducing the number of poor households but also ensuring more equitable resource distribution within households across all basic sectors. The substantial disparities we identify indicate that policies focused solely on household-level outcomes may be insufficient to ensure genuine improvements in individual welfare. A more nuanced, sector-sensitive approach to both poverty measurement and policy intervention is needed, one that explicitly recognizes and addresses the diverse ways in which poverty and inequality manifest across different vulnerable groups in Philippine society. Only through such targeted approaches can we make meaningful progress toward realizing the vision of inclusive development outlined in *AmBisyon Natin* 2040.

7. References

Albert, J. R. G., Martinez, A., Kikkawa, A., Park, D., Bulan, J. A. N., Sebastian-Samaniego, I., Estrada, G., and Umali, M. A. (2024). An Examination of Poverty Among Elderly in Asia and the Pacific. Asian Development Bank. https://www.adb.org/sites/default/files/institutional-document/964861/adpr2024bp-examination-poverty-elderly-asia-pacific.pdf (Accessed on December 2, 2024).

Albert, J. R. 2008. Issues on Counting the Poor. Policy Note No. 2008-11. Makati City, Philippines: Philippine Institute for Development Studies (PIDS). https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidspn0811.pdfr (Accessed on August 4, 2024).

Apps, P. F., and Rees, R. 1988. Taxation and the household. Journal of Public Economics, 35(3), 355-369. https://www.sciencedirect.com/science/article/abs/pii/0047272788900370 (Accessed on August 4, 2024).

Apps, P. and Savage, E. 1989. Labour supply, welfare rankings and the measurement of inequality. Journal of Public Economics 39 (1989): 335-364. https://linkinghub.elsevier.com/retrieve/pii/0047272789900339 (Accessed on August 4, 2024).

Bargain, O., Donni, O., & Kwenda, P. 2014. Intrahousehold distribution and poverty: Evidence from Côte d'Ivoire. Journal of Development Economics, 107, 262-276. https://www.sciencedirect.com/science/article/abs/pii/S0304387813001806 (Accessed on August 4, 2024).

Bargain, O., Lacroix, G., and Tiberti, L. 2018. Validating the collective model of household consumption using direct evidence on sharing. IZA Discussion Papers 11653, Institute of Labor Economics (IZA). https://docs.iza.org/dp11653.pdf (Accessed on August 4, 2024).

Becker, G. S. 1965. A theory of the allocation of time. The Economic Journal, 75(299), 493-517. https://doi.org/10.2307/2228949 (Accessed on August 4, 2024).

Becker, G. S. 1981. A Treatise on the Family. Cambridge, Massachusetts, USA: Harvard University Press.

Blackorby, C., and Donaldson, D. 1993. Adult-equivalence scales and the economic implementation of interpersonal comparisons of well-being. Social Choice and Welfare, 10(4), 335-361. https://www.jstor.org/stable/41106065 (Accessed on August 4, 2024).

Blundell, R., Chiappori, P. A., & Meghir, C. 2005. Collective labor supply with children. Journal of Political Economy, 113(6), 1277-1306. https://www.jstor.org/stable/10.1086/491589 (Accessed on August 4, 2024).

Bose-Duker, T. 2017. Intra-household resource allocation and poverty: The Ghanaian case. Unpublished manuscript.

Bose-Duker, T., Henry, M., & Strobl, E. 2020. Children's resource shares: Male versus female-headed households. Journal of Family and Economic Issues, 1-13. https://link.springer.com/article/10.1007/s10834-020-09743-3 (Accessed on August 4, 2024).

Bose-Duker, T., Gaddis, I., Kilic, T., Lechene, V. and Pendakur, K. 2021. Diamonds in the rough? Repurposing multi-topic surveys to estimate individual level consumption poverty. Policy Research Working Paper 9661, World Bank, Washington DC. https://documents1.worldbank.org/curated/en/354631620913886186/pdf/Diamonds-in-the-Rough-Repurposing-Multi-Topic-Surveys-to-Estimate-Individual-Level-Consumption-Poverty.pdf (Accessed on August 4, 2024).

Brown, C., R. Calvi, and J. Penglase 2021. Sharing the pie: An analysis of undernutrition and individual consumption in Bangladesh. Journal of Public Economics, Volume 200, 2021 https://doi.org/10.1016/j.jpubeco.2021.104460. (Accessed on August 4, 2024).

Browning, M., Bourguignon, F., Chiappori, P.A. and Lechene, V. 1994. Income and Outcomes: A Structural Model of Intrahousehold Allocation. Journal of Political Economy, vol. 102, no. 6. https://www.journals.uchicago.edu/doi/10.1086/261964 (Accessed on August 4, 2024).

Browning, M., Chiappori, P. A., & Lewbel, A. 2013. Estimating consumption economies of scale, adult equivalence scales, and household bargaining power. Review of Economic Studies, 80(4), 1267-1303. https://www.jstor.org/stable/43551559 (Accessed on August 4, 2024).

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. https://www.journals.uchicago.edu/doi/10.1086/706983 (Accessed on August 4, 2024).

Chiappori, P. A. 1988. Rational household labor supply. Econometrica, 56(1), 63-90. https://www.jstor.org/stable/1911842 (Accessed on August 4, 2024).

Chiappori, P.A. 1992. Collective Labor Supply and Welfare. Journal of Political Economy, University of Chicago Press, vol. 100(3), pages 437-467, June. https://www.journals.uchicago.edu/doi/10.1086/261825 (Accessed on August 4, 2024).

Chiappori, P. A., & Ekeland, I. 2009. The microeconomics of efficient group behavior: Identification. Econometrica, 77(3), 763-799. https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA5929 (Accessed on August 4, 2024).

De Vreyer, P., & Lambert, S. 2020. Inequality, poverty and the intra-household allocation of consumption in Senegal. World Bank Economic Review, 35(2), 414-435. https://academic.oup.com/wber/article-abstract/35/2/414/5734985 (Accessed on August 4, 2024).

Duflo, E. 2003. Grandmothers and Granddaughters: Old Age Pension and Intra-Household Allocation in South Africa. World Bank Economic Review, 17(1), 2003: 1-25. https://academic.oup.com/wber/article-abstract/17/1/1/1676291 (Accessed on August 4, 2024).

Dunbar, G. R., 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(1), 438-71. https://www.aeaweb.org/articles?id=10.1257/aer.103.1.438 (Accessed on August 4, 2024).

Dunbar, G. R., Lewbel, A., & Pendakur, K. 2019. Identification of random resource shares in collective households without preference similarity restrictions. Journal of Business & Economic Statistics, 39(2), 402-421. https://www.tandfonline.com/doi/full/10.1080/07350015.2019.1665532 (Accessed on August 4, 2024).

Jorgenson, D. W., & Slesnick, D. T. 1984. Aggregate consumer behavior and household equivalence scales. Journal of Business & Economic Statistics, 2(4), 329-341. https://www.jstor.org/stable/1391902 (Accessed on August 4, 2024).

Klasen, S. and Lahoti, R. 2018. An Individual-based Multi dimensional Poverty Assessment: An Application to Six Developing Countries. Unpublished draft.

Khadan, J., Strobl, E., & Tuffour, T. 2020. Poverty and intra-household resource allocation in Surinamese households. IDB Working Paper 1045, Inter-American Development Bank. https://publications.iadb.org/en/poverty-and-intra-household-resource-allocation-surinamese-households (Accessed on August 4, 2024).

Kugler, M., Viollaz, M., Duque, D., Gaddis, I., Newhouse, D., Palacios-Lopez, A., and Weber, M. 2021. How did the COVID-19 crisis affect different types of workers in the developing world? World Bank Policy Research Working Paper 9703. https://documents1.worldbank.org/curated/en/409921624030877958/pdf/How-Did-the-COVID-19-Crisis-Affect-Different-Types-of-Workers-in-the-Developing-World.pdf (Accessed on August 4, 2024).

Lechene, V., Pendakur, K. and Wolf, A. 2021. OLS estimation of the intra-household distribution of consumption. IFS Working Paper W21/19, Institute for Fiscal Studies. https://ifs.org.uk/publications/ols-estimation-intra-household-distribution-expenditure (Accessed on August 4, 2024).

Lewbel, A., and Pendakur, K. 2008. Estimation of collective household models with Engel curves. Journal of Econometrics, 147(2), 350-358. https://www.sciencedirect.com/science/article/abs/pii/S0304407608001498 (Accessed on August 4, 2024).

McElroy, M. B., and Horney, M. J. 1981. Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand. International Economic Review 22, no. 2. Pages 333–49. https://doi.org/10.2307/2526280. (Accessed on August 4, 2024).

Muñoz Boudet, A.M., Buitrago, P., Leroy de la Briere, B., Newhouse, D., Matulevich, E. R., Scott, K. and Suarez-Becerra, P. 2018. "Gender Differences in Poverty and Household Composition through the Life-Cycle: A Global Perspective." Policy Research Working Paper 8360, World Bank, Washington, DC. https://documents1.worldbank.org/curated/en/135731520343670750/pdf/WPS8360.pdf (Accessed on August 4, 2024).

National Economic and Development Authority (NEDA). 2016. *AmBisyon Natin 2040: The Life of All Filipinos by 2040*. Retrieved from https://2040.neda.gov.ph/ (Accessed on August 4, 2024).

NEDA. 2023. Philippine Development Plan 2023-2028. Retrieved from https://pdp.neda.gov.ph/PDR-2023/ (Accessed on August 4, 2024).

Newhouse, D., Suarez Becerra, P., and Evans, M. 2017. New global estimates of child poverty and their sensitivity to alternative equivalence scales. Economics Letters, 157, 125-128. https://www.sciencedirect.com/science/article/ab (Accessed on August 4, 2024).

Organization for Economic Cooperation and Development (OECD). 1982. The OECD List of Social Indicators. Paris: OECD.

OECD. 2008. Growing Unequal?: Income Distribution and Poverty in OECD Countries. Paris, France: OECD Publishing. https://doi.org/10.1787/9789264044197-en. (Accessed on August 4, 2024).

Orbeta, A.C. 2005. Poverty, Vulnerability and Family Size: Evidence from the Philippines. ADB Institute Research Paper Series No. 68 (September 2005). https://www.adb.org/sites/default/files/publication/157217/adbi-rp68.pdf (Accessed June 10, 2024).

Pendakur, K. 1999. Semiparametric estimates and tests of base-independent equivalence scales. Journal of Econometrics, 88(1), 1-40. https://www.sciencedirect.com/science/article/abs/pii/S0304407698000207 (Accessed on August 4, 2024).

Penglase, J. 2021. Consumption Inequality Among Children: Evidence from Child Fostering in Malawi. The Economic Journal 131(634), 1000-25. https://academic.oup.com/ej/article-abstract/131/634/1000/5894908 (Accessed on August 4, 2024).

Philippine Statistics Authority (PSA). (2024, August 15). *Proportion of Poor Filipinos was Recorded at 18.1 Percent in 2021*. https://psa.gov.ph/statistics/poverty/node/1684064929 (Accessed June 5, 2024).

PSA. (2023, March 24). *Fisherfolks and Farmers Remain to Have the Highest Poverty Incidences Among the Basic Sectors in 2021*. https://psa.gov.ph/statistics/poverty/node/1684041626 (Accessed December 10, 2024).

PSA. (2022, August 15). *Proportion of Poor Filipinos was Recorded at 18.1 Percent in 2021*. https://psa.gov.ph/statistics/poverty/node/167972 (Accessed June 5, 2024).

Pollak, R. A., & Wales, T. J. (1979). Welfare comparisons and equivalence scales. The American Economic Review, 69(2), 216-221. https://www.jstor.org/stable/1801646 (Accessed on August 4, 2024).

Santaeulàlia-Llopis, R. and Y. Zheng 2017. "Why is food consumption inequality underestimated? A Story of Vices and Children." Working paper. https://bse.eu/sites/default/files/working_paper_pdfs/969.pdf (Accessed on August 4, 2024).

Sokollu, S., & Valente, C. 2019. Individual consumption in collective households: Identification using panel data with an application to PROGRESA. Unpublished manuscript.

Tabuga, A., Cabaero, C. 2019. Towards Inclusive Social Protection Program Coverage in the Philippines: Examining Gender Disparities. PIDS Discussion Paper Series No. 2019-11. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1911.pdf (Accessed June 10, 2024).

World Bank. 2017. Monitoring global poverty: Report of the Commission on Global Poverty. Washington, DC: World Bank. https://documents1.worldbank.org/curated/en/353781479304286720/pdf/110040-REVISED-PUBLIC.pdf (Accessed on August 4, 2024).

World Bank 2018. Poverty and Shared Prosperity Report 2018: Piecing Together the Poverty Puzzle, Washington, DC USA: World Bank. https://openknowledge.worldbank.org/bitstream/handle/10986/30418/9781464813306.pdf (Accessed on August 4, 2024).