

Intrahousehold Resources Allocation in Thailand: Sharing Rules and Determinants

Wuttipong Tunyut

Abstract—This study aims to determine the sharing rules on resources within Thai households. The sharing rules are obtained as nonlinear functions of the Engel curves of assignable goods across household members. The Engel curves are estimated by the Seemingly Unrelated Regression (SUR) method. The results provide evidence of inequality occurring between individuals, not only between Thai adult men and women but also between children living in each specific type of household. Thai males get a higher share of household resources; these gender gaps are relatively low compared with other countries' cases reported in previous literature. Thai children living with their relatives get a large share of their household resources, but not result in high expenditure due to their poverty.

Index Terms—Intrahousehold allocation, household economics, poverty measurement, inequality.

I. INTRODUCTION

Consumption expenditure and income are commonly used as a monetary measure of welfare. These standard welfare indicators are generally observed and calculated at the household level, but well-being and utility apply to individuals, not households [1]. Some people may live in poverty even if they don't live in a poor household because the intrahousehold resource allocation may not be equal. This complication would be particularly interesting in the context of Thailand because there are a lot of Thai people, especially children, who live in multigenerational or skip-generation households. There are several literatures indicating that the characteristics and composition of households can profoundly influence well-being across individuals, e.g. [2]–[4].

None of the previous studies in Thailand directly determine the consumption at the individual level. Existing studies on individual-level well-being in Thailand focus on the effects of households' characteristics on labor supply and quality of children's lives by indicating related outcomes such as education and nutritional status. Lekfuangfu and Srungboonmee [5] analyzed Thai household survey data and found that children living in skip-generation households tend to live in worse conditions compared to others. Deaton [6] tested for discrimination in the allocation of goods between boys and girls by comparing the share of household expenditure on children's goods for given household characteristics and found a small and statistically insignificant bias in favor of boys in Thailand. Mutakalin [7] evaluated the effects of women's participation in Export Processing Zones (EPZs) on women's bargaining power by

collecting the primary data and find no correlation between these two factors.

This study aims to examine the Thai household's "sharing rules," defined as the proportion of total household expenditure that is allocated to each household member, and to investigate its determinants. It aims to indicate inequalities between individuals, not only between adult men and women but also between children living in each specific type of household. The result of this study could improve decision makers' understanding of the situations of individual-level well-being while the existing official data can not explicitly provide this information.

In this study, I exploit the Thai Household Socio-Economic Survey 2019 (SES2019). Technically, expenditure data calculated at the household level are not appropriate to be used for estimating the sharing rules due to households' joint consumption and economies of scale. The SES2019 and SES2015 are the only two recent datasets that consist of household expenditure data on the "assignable goods," i.e., clothing, for three types of people – adult men, adult women, and children. The assignable goods are goods consumed by a single known household member or a single known type of household member (the Thai Panel SES, the Townsend Thai data, and the Thai Labor Force Survey do not or do not completely consist of data on assignable goods expenditure).

To estimate the sharing rules, I employ a method suggested in [8] based on linear regression, which allows the researcher to hand with data of complex household types and to conveniently include household characteristics of interest into the system of the household model. I find that sharing rules of adult Thai men and adult Thai women are likely to be not equal. I also find a small inequality between children living in skip-generation households and those who live with their parents.

II. THEORETICAL AND EMPIRICAL FRAMEWORK

An Intrahousehold resources allocation is generally difficult to identify and measure. Theoretically, the frameworks of household decision-making process have been developed and proposed in several studies [9], including:

- The unitary models, which define a household as a single decision-maker and assume that all the resources in the household are pooled with sharing rules as exogenous given (as in [10]),
- The noncooperative models, which define a household as a group of people those who bargain over their household resources, and sharing rules are outcomes

from noncooperative processes and need not be Pareto efficient, e.g., Nash equilibrium (as in [11]),

- The cooperative models, known as the collective approach, which define a household as a collection of people who bargain over their household resources when each member’s utility is affected by the others’, and sharing rules are outcomes from cooperative processes, i.e., Pareto equilibrium (as in [12], [13]).

There are several studies showing that households’ decision-making tend to be cooperative processes, e.g., [12], and sharing rules could be affected by household’s and member’s characteristics [14], [15].

Empirically, collective models have been widely used to estimate sharing rules in various country studies. I conducted a systematic review of sharing rule estimating and found that researchers can provide a different empirical setting depending on their on-the-shelf data with different social welfare functions, the composition of individuals, indicators of interest, and bargaining outcomes. Table I shows (an example of) the result of the systematic review.

TABLE I: A SYSTEMATIC REVIEW OF SHARING RULE ESTIMATING

Studies	Period	Country	η^f ^a	η^m	η^c
[16]	1999	Italy	0.465	1- η^f	
[17]	1974-1992	Canada	0.58	0.42	N/A
[18]	2004-2005	Malawi	0.304	0.489	0.207
[19]	2002	Côte d’Ivoire	0.38-0.52	0.36-0.48	0.27-0.19
[20]	2009-2010	France	0.45-0.49	N/A	N/A
[21]	2011	China	0.33-0.39	0.25-0.31	0.30-0.42
[1]	2016/17	Malawi	0.34-0.37	0.33-0.36	0.34-0.31
[22]	2004-2016	Japan	0.28	0.28	0.43
			η^f per capita	η^m per capita	η^c per capita
[8] ^b	N/A	Albania	0.24	0.29	0.13
[8]	N/A	Bangladesh	0.27	0.31	0.13
[8]	N/A	Bulgaria	0.38	0.30	0.17
[8]	N/A	Iraq	0.24	0.27	0.04
[8]	N/A	Malawi	0.27	0.31	0.12

^a η are sharing rules when f , m , and c index adult female, adult male, and children, respectively.

^b Lechene, Pendakur, and Wolf (2019) reported that they used the most recent waves for which LSMS data, except Bangladesh.

Two mainstream approaches are used in several previous studies to estimate sharing rules; the first one is a model developed by [17] (BCL), which requires data on price variation of products consumed by households. The other is the model developed by [23] (DLP), which requires data on household assignable goods consumption. Both BCL and DLP require complex nonlinear models that make them hard to estimate and apply with various household characteristics. In this study, we employ the model developed by [8] (LPW), which is a linear approximation of DLP. LPW model allows for complex household types, including skip-generation households and households with a single parent or even multiple same-sex adults.

III. DATA OF THAI HOUSEHOLDS

According to SES2019, Thailand had a population of 69.8 million people, out of which 56.4 percent were in rural areas. This percentage was significantly smaller when it was

obtained from the official civil registration data because of a large number of non-registered populations in urban areas. Thai people place great emphasis on the role of the family, so it’s a common phenomenon for rural working-age adults to temporally or seasonally migrate to urban areas for taking higher paid jobs and let their parents raise their children. Most skipped generation households, especially in the Northeast, are the result of this living arrangement. However, This living arrangement tends to be less common; Besides, Thai households tend to be smaller due to the diminishing of fertility rate and the increasing of the proportion of nuclear families [3]. Table II shows the portion of each Thai household type in 2019 classified by member composition and regions.

TABLE II: THE PORTION OF EACH THAI HOUSEHOLD TYPE IN 2019

Regions	Types of households					total
	Single adult	Adults with no child	Children and their parent(s)	Children and their relative(s)	Children and nonrelative adult(s)	
Bangkok	25.10%	53.95%	18.05%	2.79%	0.12%	100%
Central	24.33%	48.10%	20.78%	6.64%	0.15%	100%
North	21.96%	47.58%	20.69%	9.65%	0.12%	100%
Northeast	19.33%	44.66%	21.65%	14.21%	0.14%	100%
South	21.18%	43.71%	29.75%	5.15%	0.21%	100%

Source: author’s calculations from SES2019

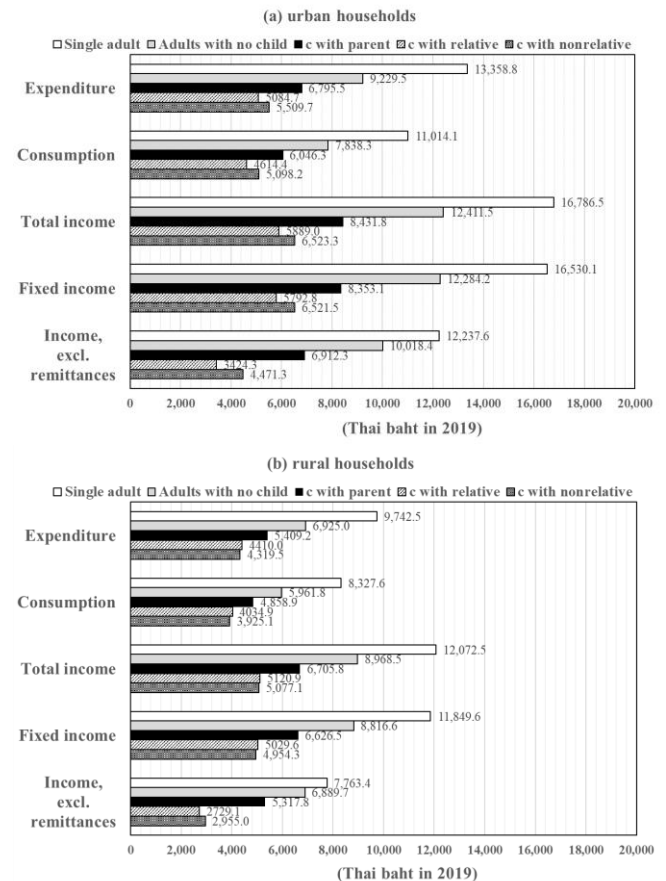


Fig. 1. Thai Households’ Monthly Average Income and Expenditure Per Capita (Source: author’s calculations from SES2019).

Fig. 1 illustrates the monthly average income and expenditure per capita of Thai households with different compositions of members and locations. It shows that household income and expenditure per capita are much higher in urban than rural areas. Rural households’ income

strongly depends on remittance. Households with children living with their parents tend to have higher income and expenditure per capita than households with children living with adults who are not their parents. Nevertheless, these per capita data cannot be explicitly used to determine individuals' share of their household resources if the intrahousehold distributions are not equal among members. The children living with their relatives may live in better conditions than those who live with their parents, even if their households are poorer. Moreover, I find that children aged 6-15 living with their relatives have a school attendance rate (= 98.8%) that is statistically insignificant higher, according to standard t-test result, than those who live with their parents (= 98.6%).

IV. EMPIRICAL MODEL

This paper use LPW to determine the Thai household sharing rule by estimating household-level Engel curves for assignable goods. The superscript t index for types of individuals, t = f, m, and c for adult female, adult male, and child, respectively. (SES2019 does not consist of boy and girl clothing but children clothing.) The subscript h = 1, 2, ..., H index households. Household-level Engel curves (W) for assignable goods of individual type t is a function of individual-level Engel curves (w), sharing rule (η), total household expenditure (y), and the number of individual (n) type t in household h:

$$W_h^t(y) = \eta^t(y) w_h^t(\eta^t(y) y / n^t). \quad (1)$$

From DLP and LPW, if the model assumes, a. resource shares those do not depend on the household budget, b. the Almost Ideal Demand System, and the similar across people assumption, (1) can be written as in linear approximation form as (see [8])

$$W_h^t = \alpha_h^t + b_h^t \ln y + \varepsilon_h^t \quad (2)$$

where $\alpha_h^t = \alpha_0^t + \alpha_m^t m_h$ and $b_h^t = \eta_h^t(m_h) \beta(z_h)$. "m" is a vector consists of a vector of "z," preference shifters and n, and vector of "d," distribution factors that affect resource shares but not preferences.

The parameters in (2) will be estimated using Seemingly Unrelated Regression (SUR) to handle the correlation of error terms. Since $\sum_t \eta^t = 1$, we can calculate sharing rules by using (3)

$$\hat{\eta}_h^t = \hat{\eta}^t(m_h) = \hat{b}_h^t / \sum_t \hat{b}_h^t; \quad (3)$$

Thus, the per-capita resource shares of individual type t are $\hat{\eta}_h^t / n_h^t$, and the gender gaps are $(\hat{\eta}_h^m / n_h^m) - (\hat{\eta}_h^f / n_h^f)$.

In this paper, we separately estimate the model of each type of household, classified by the composition of household members and the relation with children. The distribution factors are the working status of adult women and men dummy (1 = employed). The preference shifters are area (Area, 1 = urban), gender of head of household (Female head, 1 = female), the average age of members (HH_age), religion of

the head of household (Budish head, 1 = Budish, and Muslim head, 1 = Muslim), education level of the head of household (Head_edu, 1 = above secondary education), and proportion of adult females and girls in the households (FG). The descriptive statistics are shown in Table III.

TABLE III: THE PORTION OF EACH THAI HOUSEHOLD TYPE IN 2019

Variable	Mean	Std. Dev.	Min	Max
n _m	1.1081	0.7810	0	6
n _f	1.2487	0.7815	0	7
n _c	0.3825	0.7058	0	7
Area	0.5665	0.4956	0	1
Female head	0.4040	0.4907	0	1
HH_age	45.6093	15.9416	16	99
Budish head	0.9394	0.2386	0	1
Muslim head	0.0531	0.2243	0	1
Head_edu	0.1153	0.3194	0	1
FG	0.5308	0.2915	0	1

Number of observations = 45,586, Source: author's calculations from SES2019

All of the variables were obtained from SES2019. This paper use person-level clothing expenditure as the assignable good. Clothing averagely takes 3.71 percentage share of Thai household total expenditure; This number is relatively high compared with the 12 countries reported in [8]. I conduct a pre-test estimation of (2) by using simple linear least square estimators on pooled data to ensure that the Engel curves of clothing are not flat. The estimation of the pre-test model shows positive and statistically significant estimators of " b_h^t ", which mean parameters of interest can be estimated by using this data, and clothing is found to be a luxury in Thailand.

V. RESULTS: SHARING RULE AND GENDER GAP

This paper estimate six systems of Engel curve equations for various type of households; each system contains three equations for each type of assignable goods with the number of each type of individual in households, preference shifters, and distribution factors as regressors. The calculated sharing rules are shown in Table IV; A: all households, B: households with children, C: households with adult male(s) and adult female(s) but no children, D: households with all types of individuals, E: households with children living with their parents, and F: households with children living with their relatives. I also conduct the estimation of households with children living with nonrelatives and households with children living with single or same-sex adults, but the data can not satisfy the rank condition due to the small number of observations.

According to the results, the adult males' per capita shares of household resources are 2-3 percentage points larger, or 6 – 7 percentage larger, than the adult females'. These gender gaps are relatively low compared with other countries' cases reported in Table I. Thai children's share of household resources, about 14-20 percentage, is the smallest because children usually consume less than adults. Thai children living with their relatives get a greater share of their household resources compared with children living with their parents by six percentage point; however, the gap of total expenditure spent by these two groups are small because households with children living with their relatives are averagely poorer. Finally, the estimation results show

statistically significant positive effects of living in urban and education of the head of household on adult males' resource shares; besides, adult females' and children's resource shares are higher when adult females are employed.

TABLE IV: THE PORTION OF EACH THAI HOUSEHOLD TYPE IN 2019

Variable	Type	A: All n = 45,586		B: HH with c n = 12,501	
		mean	s.d.	mean	s.d.
Sharing Rule	Male	0.46	0.27	0.35	0.12
	Female	0.46	0.28	0.40	0.10
	Children	0.08	0.04	0.25	0.15
Sharing Rule Per Capita	Male	0.45	0.24	0.28	0.13
	Female	0.43	0.21	0.30	0.13
	Children	0.08	0.04	0.19	0.11

Variable	Type	C: f and m n = 20,458		D: f, m, and c n = 10,855	
		mean	s.d.	mean	s.d.
Sharing Rule	Male	0.52	0.11	0.39	0.13
	Female	0.49	0.11	0.39	0.09
	Children			0.22	0.15
Sharing Rule Per Capita	Male	0.42	0.12	0.31	0.15
	Female	0.39	0.10	0.29	0.12
	Children			0.16	0.11
Gender Gap		0.03		0.02	

Variable	Type	E: c with parents n = 7,896		F: c with relatives n = 2,912	
		mean	s.d.	mean	s.d.
Sharing Rule	Male	0.40	0.28	0.34	0.15
	Female	0.41	0.76	0.38	0.19
	Children	0.18	0.92	0.28	0.30
Sharing Rule Per Capita	Male	0.31	0.24	0.29	0.16
	Female	0.28	0.74	0.32	0.19
	Children	0.14	0.90	0.20	0.25

f, m, and c index adult female, adult male, and children, respectively.

Source: author's calculations from SES2019

VI. CONCLUSION

This study aims to estimate the sharing rules on resources within Thai households. I employ the model suggested by [8] with the assignable goods and household characteristics data consisted in SES2019. The estimation results indicate that Thai males get a larger share of household resources than Thai females; these gender gaps are relatively low compared with other countries' cases reported in previous literature. Thai children living with their relatives get a larger share of their household resources compared with children living with their parents, but they don't spend much more because their households are poorer. This study can be improved by doing more research on patterns of household consumption and the validity of the model assumptions, so it needs more comprehensive data, especially data on individual-level consumption.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

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