Intra-household Manageable Income and the Choice on Self or Other Expenditures

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This paper focuses on the expenditures of heterosexual couples using the Japanese Panel Survey of Consumers. A family's income transfer information can help identify the division of resources. The results were calculated using Engle curves, and showed that an increase in resources led to an increase in both private expenditures and expenditures on others. In addition, they often spent different resources on themselves and others when they had different levels of income. On average, wives had fewer private expenditures than husbands. Moreover, husbands spent more on private expenditures when had fewer available resources and less when they had more resources.

INTRODUCTION

Intra-household income transfer between husbands and wives is common in Japanese households. Over 90% of husbands transfer income to their wives for daily expenditures. By investigating the transfer of resources, the total manageable resources of heterosexual couples can be determined. In addition, we can estimate an individual's resource division for themselves or other household members. The results can help us better understand household behaviors. For the purposes of this report, resources refer to an income from full-time wages. The fixed time endowment includes leisure time, unpaid labor supply time, and market labor supply time.

The collective model is a popular method used to estimate how many resources each household member shares. Moreover, public goods are exclusive from private goods, according to Browning, Bourguignon, Chiappori, and Lechene (1994). In addition, Couprie (2007) estimated the shared private expenditures between the husbands and wives. In recent years, researchers have focused on shared resources when determining total household resource expenditures rather than private expenditures (Cherchye, De Rock, & Vermeulen, 2012; Cherchye, De Rock, Lewbel, & Vermeulen, 2015).

This study explored the division of resources among husbands, wives, and other family members. First, the manageable incomes of each party was calculated. The Engle curves were then estimated separately to examine their private expenditures, as well as expenditures for other household members.

The paper is structured as follows. The first section describes the model used to analyze data in this report. The following section explains the data, describes the econometric methodology, and discusses the estimation results and further implications of this study.

MODEL

The public and private expenditures of husbands and wives were modelled in this section. It assumed that an individual's utility, V^i where $(i = w, h)$, was the combined utility of two separable sub-utilities: $u^i(l^i, c^i)$, which is an individual's utility level with private expenditures, c^i, and leisure time, l^i ; and $u^{oi}(c^i_{-i}, g^i, n^i, T^i)$, which is the individual's utility level with spending resources on private expenditures, c^i_{-i}, public consumption, g^i, unpaid labor supply time, n^i, and income transfer to the spouse, T^i.

$$V^i\left(u^i(l^i, c^i), u^{oi}(c^i_{-i}, g^i, n^i, T^i)\right) \tag{1}$$

Assume the individual, $(i = w, h)$, tries to maximize their utility under budget constraints, which are defined as the total income transferred to the spouse, T^i; the evaluated wage expenditure on unpaid labor supply, $\varpi^i n^i$; leisure time, $\varpi^i l^i$; public expenditure, $p_g g^i$; private consumption, pc^i_{-i}; and private expenditures, pc^i_i. The summation of these values cannot be greater than their manageable resources, ϕ^i.

$$MaxV^i\left(u^i(l^i, c^i), u^{oi}(c^i_{-i}, g^i, n^i, T^i)\right)$$
$$s.t. \quad \phi^i \geq p_c c^i_w + p_c c^i_h + p_g g^i + \varpi^i l^i + \varpi^i n^i + T^i, \tag{2}$$
$$i = w, h$$

where $\phi^w = \varpi^w + T^h$ and $\phi^h = \varpi^h + T^w$. The total incomes for wives and husbands are represented by ϖ^w, and ϖ^h, respectively. The income transferred by wives to their husbands is represented by T^h, while the income transferred by husbands to their wives is represented by T^w. Lastly, the manageable income of wives and husbands is denoted by ϕ^w and ϕ^h, respectively.

The demand functions are obtained by solving (2). The private expenditures of wives, e^w, and husbands, e^h, are shown in equations (3) and (4).

$$e^w = p_c c^w + \varpi^w l^w \tag{3}$$

$$e^h = p_c c^h + \varpi^h l^h \tag{4}$$

Wives' and husbands' expenditures on others are represented by $y^w = \phi^w \text{-} e^w$ and $y^h = \phi^h \text{-} e^h$, respectively.

EMPIRICAL APPLICATION

Data
This study used data from the Japanese Panel Survey of Consumers (JPSC), conducted by the Institute for Research on Household Economics. The data is collected annually and includes detailed demographic, income management, income, savings, and expenditure information. The first cohort (Cohort A) was recruited in 1993, and new cohorts have been added every five years since then (Cohort B in 1998, Cohort C in 2003, and Cohort D in 2008). Cohort A included randomly recruited women aged 24–34 years. Other cohorts included young women aged 24–29 years.

When this data was collected, the questionnaire section regarding income management asked the participants to specify how much money their husbands transferred to them. This money transfer displays entrustment with the management of that income. A wife's manageable income includes both her own income as well as the manageable income entrusted to her by her husband. The wife's share of income management is therefore defined as her manageable income over the total household income.

For each cohort, selected samples were married heterosexual couples in which both parties were working either full time or part time. Observations with missing values were excluded.

Table 1 shows the sample's statistics. On average, husbands spent more than their wives: 21.1 thousand Japanese yen versus 11.7 thousand Japanese yen. Wives could manage up to 50% of the total household resources while husbands could manage up to 63% of the total household resources. Regarding hourly wage, husbands earned much more than their wives.

TABLE 1
SAMPLE STATISTICS

Variables	Mean	Std. Dev.
Husband's private expenditure (10,000 yen)	2.109	0.931
Husband's manageable income (10,000 yen)	4.045	1.808
Husband's manageable income square (10,000 yen)	19.633	63.813
Wife's private expenditure (10,000 yen)	1.170	0.645
Wife's manageable income (10,000 yen)	3.065	1.233
Ln (husband's hourly wage)	7.363	0.363
Ln (wife's hourly wage)	6.766	0.398
Consumer price index	0.016	1.024
Number of children less than 15 years of age	1.227	1.029
Obs.	9463	

Note: The sample is from the JPSC 1993–2013 cohorts.

Empirical Specification

We explored personal and familial expenditure choices using an Engel curve. The function form is similar to the one exhibited in Deaton and Muellbauer's work (1980).

$$e_{it}^w = \beta_0^w + \beta_1^w \phi_{it}^w + \beta_2^w (\phi_{it}^w)^2 + \gamma_1^w \varpi_{it}^w + \gamma_2^w \varpi_{it}^h + \gamma_3^w p_{it} + \upsilon_i + \varepsilon_{it}^w \qquad (5)$$

$$e_{it}^h = \beta_0^h + \beta_1^h \phi_{it}^h + \beta_2^h (\phi_{it}^h)^2 + \gamma_1^h \varpi_{it}^w + \gamma_2^h \varpi_{it}^h + \gamma_3^h p_{it} + \upsilon_i + \varepsilon_{it}^h \qquad (6)$$

The wife's and the husband's private expenditures in a household, i, over time, t, are denoted by e_{it}^w and e_{it}^h, respectively. The manageable income is represented by ϕ. Wage is represented by ϖ, and prices are represented by p. The household's fixed effects are represented by υ_i, and the error terms for the wives and husbands are represented by are ε_{it}^w and ε_{it}^h, respectively.

The private expenditures in a household include private consumption (e.g., clothes) and wage-evaluated leisure time. Other expenditures include public good expenditures, unpaid labor supply, income transfer to a spouse, and private consumption for the spouse, which are represented by $(\phi_{it}^w - e_{it}^w)$ and $(\phi_{it}^h - e_{it}^h)$ for the wives and husbands, respectively.

To estimate the expenditures on oneself versus others, parameters β_1^w and β_2^w (for the wife) and β_1^h and β_2^h (for the husband) were used. The marginal effects on increasing the manageable income of ϕ^w and ϕ^h for the wife's and the husband's expenditures on themselves are represented by $\beta_1^w + 2\beta_2^w\phi^w$ and $\beta_1^h + 2\beta_2^w\phi^w$, respectively.

TABLE 2
ESTIMATION RESULTS OF PRIVATE EXPENDITURE EQUATION

Variables	(1) Husband's private expenditures	(2) Wife's private expenditures
Husband's manageable income	0.591***	
	(0.063)	
Husband's manageable income square	-0.003***	
	(0.001)	
Wife's manageable income		0.300***
		(0.009)
Wife's manageable income square		0.006***
		(0.000)
Ln(husband hourly wage)	-0.242	-0.226***
	(0.228)	(0.013)
Ln(wife hourly wage)	0.007	0.298***
	(0.073)	(0.017)
Price	0.073	-0.015***
	(0.046)	(0.006)
Observations	9,583	9,583
R-squared	0.094	0.772
Number of household	1,721	1,721

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Other control variables are year dummies and constants.

Estimation Results and Discussion

The data provided by the JPSC was used to estimate the results of the fixed-effects model for equations (5) and (6), which are displayed in Table 2. The results obtained from the random-effects model and the fixed-effects model are almost the same.

The number of children under 15 years of age in a household negatively influenced the private expenditures of both parties. In addition, an increase in manageable resources led to an increase in both private expenditures and expenditures on others for both parties. On average, wives had fewer private expenditures than husbands. Moreover, wives shared more resources with others when they had fewer resources; however, they were more likely to spend their resources on private expenditures if they had more resources. Interestingly, the results for husbands showed the opposite: they spent more resources on private expenditures when they had fewer resources and less when they had more resources.

Intra-household income transfers are common among wives and husbands in Japanese households. The results indicated that, when wives managed more resources, they were encouraged to share more resources with family members. However, when the husbands managed fewer resources (e.g., unemployed husbands), they were also encouraged to share more resources with their wives and children.

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