Income Poverty and Intra-Household Allocation of Paid and Unpaid Work Time:
An Analysis on Rural/Urban Distinction in Turkey

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Introduction

This study explores the determinants of intra-household allocation of work time focusing on the impact of income poverty in Turkey. According to the official poverty statistics by the Turkish Statistical Institute (TUIK), 19 percent of the population in Turkey are living under the poverty line. This ratio goes up to 32 percent in the rural areas. The data we use comes from the first nationally representative and the single time use survey data collected by the urban/rural distinction in Turkey[3].

Contrary to the assumption of equal division of resources within the households in conventional approach to poverty, many studies on poverty and resource allocation among household members point to the inequalities in access to resources as well as the outcomes (Sen, 1984; Harriss, 1990; Haddad and Kanbur, 1990). Added onto these, the discussions on resource allocation among household members do not consider time as a significant resource. These studies, while focusing on the allocation of income resources exclude the inequalities in time use patterns. However, "time" is one of the most important assets and inequalities in time-use within a household might provide important insights on the impacts of poverty, helping to better understand poverty and its dynamics. Therefore, while examining the effects of poverty on individual time use patterns, this study also aims to contribute to the literature on poverty and resource distribution among households.

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[3] Due to the administrative law change in 2012, TUIK's data compilation methodology was revised and urban/rural divide is no longer available in data sources. The coverage of urban areas extended as the villages lost their legal entity and turned into neighborhoods in cities.

The empirical analysis makes use of simultaneous equation estimation of unpaid work of married men and women at working age. Assuming that husband's unpaid work time affects their wives time for unpaid work, we estimate a recursive system. The right-hand side variable we focus on is the poverty status of the family. We also control for individual and other household characteristics.

Data

The data we use comes from the first and the single time use survey with urban/rural divide in Turkey conducted by TUIK in 2006. The survey provides time use data of 10,893 individuals aged 15 or older, living in 4,345 households[4]. The data was collected by interviews and daily diaries[5]. Time use information is provided for all household members 15 years of age and over. Respondents were asked to record their activities in ten-minute intervals for 24 hours for two days of the week (one a weekday and the other a weekend day).

For our purpose here, we focus on diaries of the weekdays and on women and men in a spousal/partner relationship, and, we limit our sample to individuals who are at working age, i.e., aged 15 years old or above and younger than 65 years. Once we exclude also the individuals with missing values in the variables of interest, we are left with an overall sample of 2,491 married[6] couples living in nuclear families for whom usable data are available. Sample statistics show that 32 percent of families live in rural areas. The average number of children is slightly higher in urban areas, with 3.2 children per age group per family for the entire sample. According to the household income information and official poverty income level reported for a 4-person household, 31 percent of the sample (the first three income groups) live in poverty[7]. This ratio differs in rural and urban areas: 46 percent of rural families and 25 percent of urban families live in poverty. Individual

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[4] Randomly chosen 5,070 (3,380 urban and 1690 rural) households were contacted for the survey. The response rate is quite high as 85.7 per cent corresponding to 4,345 households.

[5] Data collection begins on December 1st, 2005 ending on December 31st, 2006, covering a 13 month-period and it is continuous on a weekly-basis.

[6] Only 5 couples among 2,491 reports that they are unmarried partners living together. We also exclude four households where there is more than one woman who reports herself as the wife. They appear to be polygamous households if not observed due to a problem in data recording.

[7] Households within the income group where the median level of income is lower than official level of poverty income for a 4-member household (549 TL) in 2006 are identified as income poor. See TUIK (2006) for poverty levels of income by household size.

characteristics indicate that the median age of the entire sample was approximately 44 years for men and 40 years for women in the median age ranges[8]. Years of education also point to differences between rural and urban and men and women in Turkey: men in urban areas have the highest years of education, while women in rural areas have the lowest. The last part of Table 2 present mean duration of time[9] (hours/day) devoted to unpaid and paid work activities by women and men. We grouped the daily activities based on the following categories[10]: (i) paid work consists of all work- and work-related activities and (ii) unpaid work includes household maintenance (food preparation, dish washing, cleaning, laundry, ironing, gardening, repairing, shopping etc.) and caring for other household members (childcare, caring for a dependent adult household member etc.)[11].

As can be seen in Table 1, married women spend approximately 1.09 hours for paid work and 6.36 hours for unpaid work which totals to 7.45 hours of work per day. This is a higher total work burden compared to their husbands who devote 6.58 hours to total work (5.75 for paid and 0.83 for unpaid work). The figures also point to major differences among women and their spouses in time devoted to unpaid work: 6.36 hours of unpaid work comprises 85 percent of women's total work time while 0.83 hours which is equal to only 50 minutes of unpaid work is 13 per cent of their husband's total work time. Difference between urban and rural areas concerning women's time is less time for total work but higher share of unpaid work in total work time. This fact is in line with the argument that women's labor market participation decreases as they move from rural to urban areas (Dayıoğlu and Kasnakoğlu, 1997). On the contrary, men's time for total work is higher but share of unpaid work is lower in urban areas than in rural areas. These figures point to increased participation of men in labor market with migration to urban areas.

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[8] Instead of actual age information, only the age group is available in the data where the respondents' age falls into.

[9] Mean duration of time is the weighted average calculated using the weight variable named 'faktor' provided in the dataset which differs for each respondent.

[10] EUROSTAT Activity Coding List is used for time use activity classification.

[11] Unpaid work time does not include travel time spent for unpaid work activities. Since, travel for all activities are classified together with unclassified activities as a single category by the survey, it is not possible to identify the amount of travel time to work.

Table 1: Descriptive Statistics

	ALL	URBAN	RURAL
Number of Observations	2,491	1,694	797
% share in sample		68	32
HOUSEHOLD CHARACTERISTICS			
Number of female child over 14	1.28	1.28	1.27
	(0.58)	(0.58)	(0.57)
Number of male child over 14	1.29	1.29	1.28
	(0.56)	(0.57)	(0.56)
Presence of children below 15	0.63	0.65	0.59
	(0.48)	(0.48)	(0.49)
Poor	0.31	0.25	0.46
	(0.46)	(0.43)	(0.50)
INDIVIDUAL CHARACTERISTICS			
Spouse's age	43.69	43.18	44.78
	(10.49)	(10.31)	(10.79)
Women's age	39.86	39.32	41.02
	(10.92)	(10.58)	(11.53)
Spouses' education years	7.47	8.06	6.21
	(3.99)	(4.11)	(3.39)
Women's education years	5.68	6.29	4.37
	(4.01)	(4.10)	(3.47)
TIME USE (hours per day)			
Spouses' paid work time	5.75	6.08	5.05
	(4.32)	(4.30)	(4.27)
Spouses' unpaid work time	0.83	0.76	0.98
	(1.39)	(1.30)	(1.54)
Women's paid work time	1.09	0.89	1.50
	(2.71)	(2.58)	(2.91)
Women's unpaid work time	6.36	6.37	6.36
	(2.86)	(2.86)	(2.86)

Note: Standard errors in parentheses unless otherwise noted.

Empirical Analysis

In order to explore the impact of poverty and other factors on unpaid work time of spouses, we simultaneously estimate time allocation decisions within the household by couples living in urban and rural Turkey. The model we use is a recursive one that allow for correlations in unobserved effects. The sample characteristics show traditional gender division of labor in Turkey: men spend most of total work time on paid work that and spend most of their total work time on unpaid work activities[12]. Women are considered secondary earners and their main responsibilities are housework and taking care of children. Based on these, spouses are modeled as "helping" their wives for unpaid work. We use the following empirical specification[13]:

$$y_{hi} = \alpha_h x_{hi} + \beta_h H_i + \varepsilon_{hi}$$

$$y_{wi} = \theta_h y_{hi} + \alpha_w x_{wi} + \beta_w H_i + \varepsilon_{wi}$$

where i denotes the individual. The dependent variable y represent time allocated to unpaid work activity, x is a vector of individual characteristics, H is a vector of household characteristics, α, β and θ are vectors of parameters and ε is the error term where subscripts w and h represent women and their spouses respectively. Thus, our empirical specification is a recursive model where the spouses' time devoted to unpaid work determines women's time for unpaid work[14]. The explanatory variables are reported in Table 1. Table 2 presents the estimation results. The hours spent for paid work of each individual is found to have a negative and statistically significant effect on their unpaid work time, as expected. The effect of unpaid work time of spouses on women's unpaid work time is negative and significant for those living in urban areas and for the whole sample. This is also an expected result, indicating that spouses' help decreases women's unpaid work burden.

The age and education variables seem to be the determinants of unpaid work mostly in rural areas, with a decreasing effect. The negative sign of the education variable on unpaid work time of women points to equalizing effect of education. In addition, the interaction term (years of education*age) is also significant only in rural areas and for wives, implying that the negative effect of education decreases with age for women.

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[12] See Memiş, Öneş and Kızılırmak (2011).

[13] See for example Mancini and Pasqua (2009) for a similar specification.

[14] The empirical literature on time use usually Tobit specification, because of large number of individuals reporting zero hours of work. However our sample does not fit to this type of data especially for women's unpaid work time. Thus we use standars OLS method in the estimations.

The effect of children aged 15 and older is usually positive. Thus, relatively older children seem to help their parents for unpaid work. However, this effect differs for boys and girls: girls in urban areas help both their mothers and fathers, while those in rural areas help only their mothers. This result may reflect the more intense adoption of traditional values in rural areas. Sons, on the other hand, only help their fathers in both urban and rural areas.[15] All these findings regarding relatively older children are interesting as they show how traditional roles are reproduced over the generations. The presence of children under the age of 15 has a positive and statistically significant effect on unpaid work of spouses across the sample, as expected. Estimates for urban and rural areas, however, present a different picture: Only mothers of young children have a statistically significant effect on unpaid work time. This is a reflection of how childcare is seen as a woman's responsibility in Turkey.

Finally, the variable of which we are mainly concerned, poverty, has a positive effect only on the unpaid working time of rural women and the whole sample. This result is in line with the finding that poverty affects men and women asymmetrically and increases women's unpaid workload, but only in rural areas.

Table 2: Estimation Results for Unpaid Work

	All		Urban		Rural	
	Spouses	Women	Spouses	Women	Spouses	Women
Paid work	-0.13***	-0.54***	-0.13***	-0.55***	-0.14***	-0.51***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
Unpaid work of husband		-0.56***		-0.73***		-0.28
		(0.13)		(0.18)		(0.19)
Age	1.58	-4.45*	3.73*	-0.32	-2.80	-16.36***
	(1.58)	(2.45)	(1.94)	(3.01)	(2.94)	(4.30)
Age^2	-0.02	0.03	-0.04*	-0.02	0.03	0.15***
	(0.02)	(0.03)	(0.02)	(0.04)	(0.03)	(0.05)
Years of education	1.80	-6.82**	2.45	-2.09	-3.17	-25.78***
	(1.54)	(3.22)	(1.76)	(3.83)	(3.57)	(6.75)

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[15] These findings agree with other work that find that children help with housework (Ilahi, 2000).

Years of education*age	-0.03	0.15*	-0.04	0.03	0.10	0.66***
	(0.04)	(0.08)	(0.04)	(0.09)	(0.08)	(0.16)
Female child older than 14	-5.29*	-32.08***	-8.50***	-37.46***	1.70	-26.01***
	(2.92)	(5.86)	(3.16)	(8.07)	(6.47)	(8.85)
Male child older than 14	-11.66***	-15.95**	-8.607**	-16.01*	-18.36***	-13.68
	(3.27)	(6.72)	(3.81)	(8.54)	(6.11)	(11.28)
Presence of child under 15	8.80**	51.42***	8.61*	57.16***	8.93	38.43***
	(4.13)	(8.97)	(4.92)	(11.24)	(7.33)	(14.91)
Poor	2.71	16.33**	3.72	9.65	2.56	28.21**
	(3.97)	(8.15)	(4.62)	(10.91)	(7.08)	(12.33)
Rural	2.976	16.12**				
	(3.792)	(7.856)				
Constant	65.27**	602.7***	20.04	524.5***	169.1***	861.8***
	(32.41)	(51.50)	(40.16)	(61.91)	(61.73)	(92.20)
Observations	2,491	2,491	1,694	1,694	797	797
lnsig_1		4.298***		4.249***		4.380***
		(0.0410)		(0.0527)		(0.0633)
lnsig_2		5.018***		5.058***		4.936***
		(0.0302)		(0.0431)		(0.0405)
atanhrho_12		0.425***		5.058***		0.258**
		(0.0677)		(0.0431)		(0.117)

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Conclusion

This study aims to explore the determinants of unpaid work for women and men, focusing on the impact of poverty. Evidence obtained shows that poverty affects time use patterns of men and women differently and the burden of poverty is not shared equally within families in rural areas. No statistically significant relation is observed between poverty and unpaid time of women and spouses living in urban areas. Additional results of econometric estimates are as follows: 1- Unpaid work of women in rural areas decreases with age and education, which is the equalizing effect of education. In addition, this negative effect of education decreases with age. 2- Traditional roles are

reproduced through generations: girls aged 15 and over help both their mothers and fathers in urban areas, while those in rural areas only help their mothers. Sons in the same age group only help their fathers in both urban and rural areas. 3- The presence of children under the age of 15 only increases the unpaid workload of mothers.

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