ALLOCATION OF PARENTS' TIME TO CHILD CARE AMONG TURKISH FAMILIES: EVIDENCE FROM TIME-USE SURVEY

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─Abstract ─

This paper focuses on the time parents allocate to child care using data from the Turkish Time Use Survey 2006 in order to examine the determinants of parental time investment in child care. Findings from Tobit analysis indicate that number of children of either gender has no effect on the minutes fathers spend on child care which suggests the lack of parental preferences in time allocation. However, number of children of both genders is found to be positively associated with mothers' time use. Results also suggest that mother's education is positively and significantly associated with minutes both parents spend taking care of children. For both parents, we find no evidence of association between time investment and household resources.

Key Words: *Time use, child care, Turkey*
JEL Classification: J13, J22

1. INTRODUCTION

It is well-documented that parental time investment in early childhood plays a crucial role for children's educational outcomes (Baker and Milligan, 2013; Buchel and Duncan, 1998; Datcher-Loury, 1988). With the availability of time-use data for developed countries, there has been a growing interest in the allocation of parental time to child care (Gutierrez-Domenech, 2010; Kalenkoski, Ribar and Stratton, 2009; Guryan, Hurst and Kearney, 2008; Sayer, Bianchi and Robinson, 2004; Sayer, Gauthier and Furstenberg, 2004; and Hallberk and Klevmarken, 2003). While intrahousehold allocation of resources in developing countries, with particular focus to gender, has been much explored, research on parental time investments is rather rare due to lack of data.[1]

Using the first available wave from Time-Use Survey in Turkey, this paper looks at the determinants of time investments of parents in child care. This topic is particularly important to study in Turkey since Turkish men are found to spend much less time on household care compared to men in other European countries. While an employed Turkish man spends on average 43 minutes a day on household care, this is 129 and 135 minutes for an Hungarian and a French man, respectively. Moreover, the daily time a woman spends on household care is 243 minutes in Turkey, whereas this is 234 and 220 minutes in Hungary and France, respectively (TUIK, 2007). These patterns clearly suggest that traditional gender role in household division of labor is prevalent in Turkey. The findings of this paper are also important for providing insight for policies to improve labor market participation of Turkish women which has long been the focus of policymakers.

We find that there is a positive correlation between education and time mother spend on child care both on weekdays and weekends. Our findings suggest that own and spouse's education is positively associated with more time on child care for fathers on weekends, but this effect is only significant at university level. In addition, while we find no evidence for parental preference, the number of sons and daughters younger than 15 are associated with greater time invested in child care by mothers, only on weekends.

This paper is structured as follows: section 2 describes the dataset and explains the empirical methodology, section 3 presents and discusses the results and section 4 concludes.

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[1] Barcellos, Carvalho and Lleras-Muney (2012) document a promale bias in childcare time in India.

2. DATA

This study draws on data from 2006 wave of the time-use surveys carried out by the Turkish Statistical Institute (TUIK). These surveys attempt to collect information on how individuals allocate their time during the day among several activities. Between January 1st and December 31st a sample of 390 households was selected monthly which yields 5070 households and 11815 individuals for the year. All household members above 15 years old were asked to record their activities on a diary for every ten-minute intervals during two 24-hour periods: one weekday and one weekend day. The survey collects information on individuals' education and employment status as well as activities during free time. At the household level information on household size, income level, housing, ownership of several appliances as well as automobile and a second residence is collected. In addition, the time-diaries provide how much time is allocated, if any, to activities in the following activity groups:

Personal care, employment, education, volunteer work, social life, household care, sports, hobbies and games, mass communication devices, travel and sleep. Of particular interest is household care which includes the time spent on child care. Unfortunately, the child-care time category is not provided separately for activities on child's physical care such as nursing, feeding, rocking them to sleep and on educational activities such as helping them with homework or reading to them. Clearly, having a more detailed breakdown of child care activities would yield better insights on the patterns of parental time with different types of child care.

The sample in this study is limited to households with married and cohabiting parents that have at least one child younger than 15 years old.[2] This leaves 664 observations for fathers and 672 observations for mothers with a complete set of covariates for the analyses.

Following Kalenkoski and Foster (2008) and Kimmel and Connelly (2007) we estimate the following equation using a Tobit model:

$$Y_i = \alpha + X_i\beta + \varepsilon_i$$

where Y_i is the number of daily minutes in weekdays and weekends each parent i spend on childcare and X_i captures individual and household characteristics that are expected to be correlated with time spent on child care such as age, own and

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[2] Although the parental time of divorced parents is admittedly of at least equal importance for policymaking, we exclude these cases due to insufficient number of observations.

spouse's education level, number of children younger than 15, a dummy for urban residence and the presence of a grandmother in the household.[3] To control for the household resources two additional dummy variables are included: a dummy variable that equals one if the largest source of household income is unearned (such rent and interest) and another dummy variable indicating the household owns the house they live in.[4]

We expect that the presence of a grandmother living in the household may have two different effects on the time allocation parents, especially mothers. On the one hand if the grandmother helps the mother with the housework, the mother may have more time available for child care. On the other hand, grandmothers may be taking care of the child care, thus freeing the mother of her child care duties, especially if she is employed outside the house.

Table 1 presents the summary statistics we use in this study. On average, a mother spends 86 and 85 minutes on child care on weekdays and weekends, respectively. As expected, fathers invest less time in child care on weekdays, 17 minutes, than on weekends, 24 minutes. In our sample, about 72 percent of mothers have at most a primary school education, and this is 56 percent for fathers.

3. RESULTS

We estimate equation (1) separately for mothers and fathers. Table 2 presents the results from estimating equation (1) using minutes mothers spend on child care separately for weekdays and weekends. We start with time allocation to child care during weekdays in column (1). Column (1) displays the ordinary least squares (OLS) estimation where we control for only the parent's age and education, the spouse's education and a dummy for urban residence. Column (2) repeats the same estimation using a Tobit model. Comparison of OLS estimates in column (1) and marginal effects in column (2) show that OLS overestimates the magnitude of the effect of covariates on child care minutes. Column (2) shows that older mothers devote significantly less time on child care and this effect is strongest for mothers in 45 - 54 age group. Column (2) indicates that a mother between 35 and 44 years old allocates on average 53 minutes fewer on child care relative to mother that is between 15 and 24 years old. Results also imply that educated

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[3] For a discussion of the use of OLS and Tobit in time-use analysis see Foster and Kalenkoski (2010).

[4] Ideally, we would also control for the age of the parents' youngest child which is found to be an important factor (Guryan et al., 2008). However, our dataset lacks this variable.

mothers tend to invest more time in child care and this effect increases with the level of education. For example, a mother with a university degree allocates on average 46 minutes more to child care relative to a mother with no diploma. In column (3) the number of sons and daughters younger than 15 and a dummy variable for the presence of a grandmother, either paternal or maternal, in the household are controlled for. In order to control for the economic resources available to the household, two dummy variables for homeownership and unearned income as the main source of household are also included. None of these additional variables significantly affect the time allocation of mothers during weekdays. The next three columns present the time allocation of mothers to child care activities on weekends. Columns (4) and (5) display the OLS and Tobit estimation results, respectively. Results suggest that relationship between mother's age and child care minutes continue to hold on weekends. Findings in column (6) indicate that mothers spend on average 13 minutes more on child care if there is one more son younger than 15 in the household. Similarly, they allocate 10 more minutes to child care if there is one more daughter younger than 15 in the household. A Wald test for equality between the two model parameters yields a p-value of 0.49 and an F-value with 1 and 671 degrees of freedom (not reported in the table). Hence, we fail to reject that null hypothesis that mothers' time allocation to child care differs across households with different numbers of sons and daughters.

Table 3 depicts the same analyses using minutes fathers allocate to child care as the dependent variable. Columns (1) to (2) display the results for fathers' child care time on weekdays using OLS and Tobit. In column (2) marginal effects from Tobit estimation imply that fathers' child care time falls with age and this effect is strongest for age group 34-45. Moreover, spouse's education has no statistically significant effect on the minutes fathers allocate to child care during weekdays. Column (3) shows that the variables number of sons and daughters younger than 15 have the expected positive coefficients but they are not statistically significant. In addition, there is no statistically significant effect of household resources as measured by homeownership. Columns (4) to (6) display the results for fathers' child care time on weekends. Interesting patterns emerge. While results with respect to age are qualitatively the same as in weekdays, coefficients of own and spouse's education are positive and statistically significant. Results in column (6) imply that on weekends a father with a university degree invests 19 minutes more in child care relative to a father with no diploma. Besides, a father who is married to a university graduate spends about 24 minutes more on the care of his children relative to father whose spouse has no diploma.

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4. CONCLUSION

This paper aims to provide insights into the time-use patterns of parents in Turkey. Our results suggest that education of the plays a key role for mothers.

Contrary to expectations, the number of children of either gender has no significant impact on minutes fathers invest in child care. In addition, we also have no suggestive evidence for the impact of household resources on time spent in child care.

Finally, with the insights provided in this paper, extension of the findings of this research to examine on the impact of labor market status on married women's time allocation may yield important policy implications. In doing so, one should take into account both the endogeneity of labor market status and how mother allocate time into different uses including paid market work, child care, household production and leisure.

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APPENDIX

Table 1: Summary Statistics

	Mothers			Fathers		
	Mean	Min	Max	Mean	Min	Max
Minutes in child care - weekdays	86.56	0	680	16.99	0	420
	std.dev(100.74)			st.dev(36.09)		
Minutes in child care - weekends	85.04	0	980	23.93	0	410
	std.dev(109.31)			st.dev(46.03)		
15-24 years old	0.08	0	1	0.01	0	1
25-34 years old	0.45	0	1	0.32	0	1
35-44 years old	0.35	0	1	0.44	0	1
45-54 years old	0.11	0	1	0.19	0	1
55-64 years old	0.01	0	1	0.04	0	1
No diploma	0.19	0	1	0.06	0	1
Less than Primary School	0.53	0	1	0.50	0	1
Primary School\Secondary School	0.10	0	1	0.13	0	1
High school\Vocational School	0.13	0	1	0.21	0	1
University or more	0.05	0	1	0.11	0	1
Urban	0.65	0	1	0.66	0	1
No of sons younger than 15 years old	1.00	0	6	0.99	0	6
	st.dev.(0.85)			st.dev(0.85)		
No of daughters younger than 15 years old	0.93	0	6	0.94	0	6
	st.dev.(0.97)			st.dev(0.98)		
Grandmother present in the household	0.02	0	1	0.08	0	1
Largest source of income is unearned	0.07	0	1	0.06	0	1
Homeownership	0.56	0	1	0.56	0	1
Number of observations	672			664		

Source: Time-use Survey (2006)

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Table 2: Mother's Minutes in Child Care

Dependent Var: Minutes in Child Care	Weekdays			Weekends		
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	Tobit - Marginal Effects	Tobit - Marginal Effects	OLS	Tobit - Marginal Effects	Tobit - Marginal Effects
25-34 years old	-25.17	-14.11	-17.81	-39.61*	-18.72	-27.36**
	(18.50)	(10.92)	(11.04)	(22.50)	(12.11)	(12.02)
35-44 years old	-84.90***	-52.65*	-52.19*	-105.12***	-61.18***	-64.31***
	(18.72)	(10.07)	(10.13)	(23.08)	(11.17)	(11.21)
45-54 years old	-103.57***	-54.79*	-51.22*	-130.49***	-66.62***	-64.54***
	(19.04)	(7.36)	(7.85)	(22.73)	(7.57)	(7.71)
55-64 years old	-65.32**	-33.77	-26.01	-92.06***	-47.69***	-40.00***
	(25.40)	(13.93)	(14.59)	(29.51)	(13.88)	(15.16)
Primary School	27.52***	21.98*	27.90*	20.33**	11.02*	21.33***
	(9.28)	(7.06)	(7.18)	(8.75)	(6.32)	(6.93)
Elementary School\Secondary School	60.34***	47.94*	57.14*	38.77**	25.34**	40.30***
	(17.66)	(14.95)	(15.79)	(18.31)	(12.67)	(14.41)
High school\Vocational School	43.82**	37.52*	47.57*	28.44*	21.14*	36.86***
	(17.31)	(14.03)	(14.50)	(16.36)	(11.56)	(12.80)
University or more	46.33***	45.88*	58.39*	34.98**	31.27**	51.55***
	(16.66)	(14.76)	(15.88)	(17.40)	(13.74)	(15.68)
Father's edu: Primary School (5 years)	4.73	3.79	4.50	-2.12	1.72	5.03
	(10.37)	(9.39)	(9.77)	(11.30)	(9.17)	(9.06)
Father's edu: Elementary or secondary	-21.17	-13.05	-12.92	-0.96	1.69	4.01
	(13.14)	(10.12)	(10.26)	(21.57)	(13.90)	(13.97)
Father's edu: Highs school or vocational	7.22	4.60	5.41	0.04	2.68	6.72
	(15.37)	(12.16)	(12.44)	(15.06)	(11.05)	(11.09)
Father's edu: University or more	-3.43	-2.22	-2.50	-2.87	-0.68	1.22
	(17.78)	(12.65)	(12.78)	(18.07)	(12.45)	(12.55)
Urban	16.06*	9.05	7.97	6.78	4.51	4.96
	(8.43)	(5.44)	(5.71)	(10.51)	(6.31)	(6.38)
No of sons younger than 15 years old	-	-	7.23	-	-	12.89***
			(3.42)			(3.33)
No of daughters younger than 15 years old	-	-	6.42	-	-	10.31***
			(3.33)			(2.94)
Grandmother in the household	-	-	-3.30	-	-	-6.61
			(7.30)			(9.63)
Largest source of income is unearned	-	-	-14.13	-	-	-12.55
			(7.78)			(8.88)
Homeownership	-	-	-8.89	-	-	-4.68
			(5.13)			(5.38)
Observations	672	672	672	672	672	672
R squared	0.188	-	-	0.151	-	-

Source: Time Use Survey (2006)

Base category: mother's education less than primary, father's education less than primary, between 15-24 years old. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Marginal effects from Tobit analysis are conditional on being uncensored.

Table 3: Father's Minutes in Child Care

	Weekdays			Weekends		
Dependent Var: Minutes in Child Care	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	Tobit - Marginal Effects	Tobit - Marginal Effects	OLS	Tobit - Marginal Effects	Tobit - Marginal Effects
25-34 years old	-36.10*	-13.37	-13.83	-11.59	-13.92***	-14.84***
	(21.26)	(8.33)	(7.79)	(10.61)	(4.10)	(4.48)
35-44 years old	-50.77**	-23.39*	-23.71*	-23.23**	-22.60***	-23.61***
	(21.36)	(8.89)	(8.43)	(10.96)	(4.57)	(5.09)
45-54 years old	-53.60**	-22.45*	-22.19*	-29.28***	-22.92***	-23.53***
	(21.40)	(6.04)	(5.83)	(11.02)	(3.82)	(4.16)
55-64 years old	-51.55**	-18.68*	-19.07*	-25.25**	-19.79***	-21.09***
	(21.87)	(5.53)	(5.39)	(12.23)	(4.97)	(5.37)
Primary School	3.29	3.25	4.01	3.68	1.35	1.90
	(5.36)	(5.48)	(5.31)	(5.08)	(5.98)	(6.02)
Elementary School\Secondary School	-1.81	1.72	1.97	9.61	7.22	7.50
	(5.79)	(6.22)	(6.13)	(6.91)	(7.57)	(7.66)
High school\Vocational School	4.74	6.02	7.04	13.27**	8.91	9.52
	(5.82)	(6.35)	(6.25)	(6.63)	(7.19)	(7.29)
University or more	5.81	3.88	4.36	24.29**	18.63*	19.15*
	(7.59)	(7.18)	(7.07)	(10.01)	(9.71)	(9.79)
Mother's edu: Primary School (5 years)	0.10	1.77	3.02	2.85	3.70	4.37
	(4.88)	(3.54)	(3.85)	(4.09)	(4.00)	(4.12)
Mother's edu: Elementary or secondary	0.71	3.02	4.27	5.27	7.00	7.91
	(7.59)	(5.17)	(5.65)	(7.31)	(6.01)	(6.47)
Mother's edu: Highs school or vocational	-2.70	1.64	2.99	1.07	4.46	5.18
	(6.42)	(4.64)	(5.13)	(7.41)	(5.66)	(5.98)
Mother's edu: University or more	22.68**	21.77	25.20	33.76**	22.33*	23.77**
	(11.50)	(9.21)	(10.18)	(17.10)	(11.62)	(11.94)
Urban	5.43*	3.21	3.25	3.16	0.96	0.98
	(2.92)	(2.26)	(2.35)	(3.67)	(2.83)	(2.94)
No of sons younger than 15 years old	-	-	2.50	-	-	1.01
			(1.44)			(1.62)
No of daughters younger than 15 years old	-	-	0.15	-	-	0.44
			(1.48)			(1.57)
Grandmother in the household	-	-	-0.44	-	-	-2.35
			(3.05)			(4.56)
Largest source of income is unearned	-	-	3.68	-	-	3.72
			(4.88)			(6.53)
Homeownership	-	-	-0.76	-	-	0.38
			(2.23)			(2.82)
Observations	664	664	664	664	664	664
R squared	0.086	-	-	0.084	-	-

Source: Time Use Survey(2006)

Base category: mother's education less than primary, father's education less than primary, between 15-24 years old. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Marginal effects from Tobit analysis are conditional on being uncensored.