

Parent's Education as a Determinant of Educational Childcare Time

Jose Ignacio Gimenez-Nadal, Department of Economics
(University of Zaragoza)

J. Alberto Molina, Department of Economics (University of
Zaragoza) and IZA

June 21, 2012

Outline

Introduction

Data and Variables

Empirical Strategy

Results

Conclusions

Introduction

Motivation

- ▶ Leibowitz's seminal work on parental childcare time and increased human capital of children (Leibowitz, 1972;1974;1977) \Rightarrow relationship between parental time investment and child outcomes (Han, Waldfogel and Brooks-Gunn, 2001; Brooks-Gunn, Han and Waldfogel, 2002)
- ▶ Literature strongly supports a positive relationship between parental childcare time and increased human capital of children.
- ▶ Studying what factors (e.g., race, income, education) influence the time parents devote to their children may be important for both parents and policymakers.
- ▶ Among the factors influencing the time parents devote to their children, prior research has found a positive relationship between parents' education and parental childcare time (see Guryan, Hurst and Kearney, 2008)

In this paper...

- ▶ We study the parent's education as it influences the time devoted to childcare activities.
- ▶ We use time use data from 2 European countries, Spain and the United Kingdom, and we analyze the time that opposite-sex couples with children under 18 devote to 3 types of childcare: *basic childcare*, *educational childcare* and *supervisory childcare*.
- ▶ We particularly focus on the relationship between parents' education and the time devoted to educational childcare, childcare activities aimed at increasing the human capital of the child.
- ▶ Failing to account for joint household decisions and joint provision of child care would be a critical failure that would affect the interpretation of the results ⇒ we estimate a 6-equation Seemingly Unrelated Regression (SUR).

Findings

1. Mother's education is associated with an increase in the time devoted to educational childcare by fathers, in both Spain and the United Kingdom.
 2. Mother's education is associated with an increase in the time devoted to educational childcare by mothers in Spain.
- ▶ It seems that what really matters in determining the time devoted to educational childcare at the couple level is the educational level of the mother
 - ▶ The time devoted to educational childcare by both members of the couple is complementary in both Spain and the United Kingdom \Rightarrow Assortative matching by education implies that individuals in highly-educated couples devote more time to educational childcare than their low educated counterparts, as found in prior research (Guryan, Hurst and Kearney, 2008)

Data and Variables

Data and Sample

- ▶ Multinational Time Use Survey (MTUS):
 - ▶ Ex-post harmonized cross-time, cross-national, comparative time use database, coordinated by the **Centre for Time Use Research** at the University of Oxford.
 - ▶ National randomly-sampled time-diary studies, with common series of background variables, and total time spent in 69 activities.
 - ▶ It provides us with information on individual time use, based on diary questionnaires where individuals report their activities throughout the 24 hours of the day
- ▶ Opposite-sex couples with at least one child under age 18 and where both members of the couple report information on their time allocation decisions, which allows us to analyze the time devoted to children by both parents:
 - ▶ Spain (2002) and the United Kingdom (2000) because they include time use information about all the household members aged 10 or older (most other time use surveys include time use information for only one member of the household)
- ▶ 1,527 couples for the United Kingdom, and 4,499 couples for Spain.

Time Use Variables

- ▶ The MTUS includes 69 activities, defined as the 'primary' or 'main' activity individuals were doing at the time of the interview ⇒ We study the time devoted to caring for children as "active childcare" or "primary childcare".
- ▶ 3 types of childcare:
 - ▶ Basic childcare: time spent on the basic needs of children, including breastfeeding, rocking a child to sleep, general feeding, changing diapers, providing medical care (either directly or indirectly), grooming, and so on ⇒ "physical/medical care of children (main28)".
 - ▶ Educational childcare: time spent teaching children, reading to/with children, talking with children, helping children with homework, attending meetings at a child's school, and similar activities ⇒ "teach/help with homework (main29)" and "read to, talk or play with children (main30)".
 - ▶ Supervisory childcare: time involved attending a child's sporting event or dance recital, going to the zoo with children, and taking walks with children, that is, supervising children during their daily activities ⇒ "supervise, accompany, other childcare (main31)".
- ▶ Measured in hours per day.

Basic Childcare

Table: Time devoted to *Basic childcare*

	The UK	Spain	Diff The UK-Spain	p-value diff
All fathers (N Total= 6,294)	0.32 (0.02)	0.31 (0.01)	0.02	(0.52)
All mothers (N Total= 6,294)	0.92 (0.04)	1.05 (0.02)	-0.14	(< 0.01)
Full-time working fathers (N Total= 5,770)	0.30 (0.02)	0.31 (0.01)	-0.01	(0.60)
Full-time working mothers (N Total= 2,413)	0.57 (0.06)	0.80 (0.03)	-0.23	(< 0.01)
Non-full-time working fathers (N Total= 524)	0.53 (0.10)	0.33 (0.05)	0.20	(0.07)
Non-full-time working mothers (N Total= 3,881)	1.05 (0.04)	1.23 (0.03)	-0.18	(< 0.01)
Fathers with children under 5 (N Total= 2,299)	0.65 (0.05)	0.69 (0.03)	-0.04	(0.44)
Mothers with children under 5 (N Total= 2,299)	1.74 (0.07)	2.26 (0.04)	-0.52	(< 0.01)

Notes: This table presents means of time spent in childcare activities by different demographic subgroups in the United Kingdom Time Use Survey (2000) and the Spanish Time Use Survey (2002). All time use measures are expressed in units of "hours per day." Samples include all individuals between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. The final two rows refer to individuals with at least one child under the age of 5. Basic childcare includes the time devoted to 'physical/medical care of children (main29)' of the MTUS. Educational childcare includes the activities 'teach/help with homework (main28)' and 'read to, talk or play with children (main30)' of the MTUS. Supervisory childcare includes the activity 'supervise, accompany, other childcare (main31)' of the MTUS. Survey weights are used to represent each day of the week equally within subgroups. Diff UK-Spain measures the difference between the mean time devoted to the reference activity in the UK and Spain, with positive values meaning more time devoted to the activity in the United Kingdom. P-value of the difference in parenthesis, with a p-value lower than .05 meaning that that the difference is statistically significant at the 95% level.

Educational Childcare

Table: Time devoted to *Educational childcare*

	The UK	Spain	Diff The UK-Spain	p-value diff
All fathers (N Total= 6,294)	0.25 (0.02)	0.22 (0.01)	0.03	(0.08)
All mothers (N Total= 6,294)	0.41 (0.02)	0.26 (0.01)	0.15	(< 0.01)
Full-time working fathers (N Total= 5,770)	0.24 (0.02)	0.22 (0.01)	0.02	(0.24)
Full-time working mothers (N Total= 2,413)	0.23 (0.03)	0.23 (0.01)	0.00	(0.94)
Non-full-time working fathers (N Total= 524)	0.33 (0.06)	0.24 (0.04)	0.08	(0.21)
Non-full-time working mothers (N Total= 3,881)	0.49 (0.03)	0.29 (0.01)	0.20	(< 0.01)
Fathers with children under 5 (N Total= 2,299)	0.41 (0.03)	0.40 (0.02)	0.01	(0.70)
Mothers with children under 5 (N Total= 2,299)	0.71 (0.04)	0.42 (0.02)	0.29	(< 0.01)

Notes: This table presents means of time spent in childcare activities by different demographic subgroups in the United Kingdom Time Use Survey (2000) and the Spanish Time Use Survey (2002). All time use measures are expressed in units of "hours per day." Samples include all individuals between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. The final two rows refer to individuals with at least one child under the age of 5. Basic childcare includes the time devoted to 'physical/medical care of children (main20)' of the MTUS. Educational childcare includes the activities 'teach/help with homework (main28)' and 'read to, talk or play with children (main30)' of the MTUS. Supervisory childcare includes the activity 'supervise, accompany, other childcare (main31)' of the MTUS. Survey weights are used to represent each day of the week equally within subgroups. Diff UK-Spain measures the difference between the mean time devoted to the reference activity in the UK and Spain, with positive values meaning more time devoted to the activity in the United Kingdom. P-values of the difference in parenthesis, with a p-value lower than .05 meaning that that the difference is statistically significant at the 95% level.

Supervisory Childcare

Table: Time devoted to *Supervisory childcare*

	The UK	Spain	Diff The UK-Spain	p-value diff
All fathers (N Total= 6,294)	0.03 (0.01)	0.04 (0.00)	-0.01	(0.11)
All mothers (N Total= 6,294)	0.07 (0.01)	0.09 (0.01)	-0.03	(0.01)
Full-time working fathers (N Total= 5,770)	0.03 (0.01)	0.04 (0.00)	-0.01	(0.15)
Full-time working mothers (N Total= 2,413)	0.04 (0.01)	0.09 (0.01)	-0.04	(< 0.01)
Non-full-time working fathers (N Total= 524)	0.03 (0.01)	0.04 (0.01)	-0.01	(0.51)
Non-full-time working mothers (N Total= 3,881)	0.07 (0.01)	0.10 (0.01)	-0.02	(0.08)
Fathers with children under 5 (N Total= 2,299)	0.02 (0.01)	0.04 (0.01)	-0.02	(0.01)
Mothers with children under 5 (N Total= 2,299)	0.08 (0.01)	0.11 (0.01)	-0.03	(0.06)

Notes: This table presents means of time spent in childcare activities by different demographic subgroups in the United Kingdom Time Use Survey (2000) and the Spanish Time Use Survey (2002). All time use measures are expressed in units of "hours per day." Samples include all individuals between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. The final two rows refer to individuals with at least one child under the age of 5. Basic childcare includes the time devoted to physical/medical care of children (main28) of the MTUS. Educational childcare includes the activities "teach/help with homework (main29)" and "read to, talk or play with children (main30)" of the MTUS. Supervisory childcare includes the activity "supervise, accompany, other childcare (main31)" of the MTUS. Survey weights are used to represent each day of the week equally within subgroups. Diff UK-Spain measures the difference between the mean time devoted to the reference activity in the UK and Spain, with positive values meaning more time devoted to the activity in the United Kingdom. P-values of the difference in parentheses, with a p-value lower than .05 meaning that that the difference is statistically significant at the 95% level.

Cross-country differences

- ▶ Mothers in the UK devote less time to basic childcare, while they devote more time to educational childcare, compared to their Spanish counterparts.
 1. The two countries have different welfare systems (Galvez-Muoz et al. 2011) ⇒ The UK has been classified in the group of countries with liberal systems, Spain has been included in the group of Mediterranean countries ⇒ Policies regarding the availability of public childcare services differ between the two countries
 2. The percentage of women with one or more children having part-time employment is very low in Spain compared to the United Kingdom, and Spain typically has a split work schedule ⇒ Affect the time that mothers devote to educational childcare time, since Rapoport and Le Bourdais (2007) show that hours worked in the evening have a negative effect on parents' childcare time.
 3. Mothers in the United Kingdom had a slightly higher level of education compared to their Spanish counterparts ⇒ Explain why mothers in the UK spend more time in educational childcare time.

Empirical Strategy

Econometric model

- ▶ We analyze the time devoted to *basic, educational and supervisory childcare*.
- ▶ We consider that the time one parent spends in childcare activities may serve as a substitute for the time the other parent spends in the same activities.
- ▶ We estimate a Seemingly Unrelated Regression (SUR) system on the time devoted to basic, educational and supervisory childcare by both members of the couple (6 equations), and we estimate Tobit (Tobin, 1958) regressions, given that time use is a non-negative dependent variable.
- ▶ This specification accounts for the time constraint that may require individuals to spend more time on one childcare activity and, therefore, less time on another, and that the time one parent spends on childcare may serve as a substitute for the time the other spends on the same childcare activities.
- ▶ We have alternatively estimated OLS models where we maintain the correlation structure of the residuals, and we obtain consistent results.

Econometric model

- ▶ We include: father's and mother's age (and its square) and father's and mother's education, log of relative predicted wages of the partners (and its square), non-labour income, whether the youngest child in the household is under 5, or between 5 and 12 years, the number of household members, whether the father has good health or any disability (in the regressions of father's childcare time), whether the mother has good health or any disability (in the regressions of mother's childcare time), and whether the father/mother works in the labour market (full-time or part-time).
- ▶ Education: "primary education" if individuals have "uncompleted secondary or less", parents have "secondary education" if they have "completed secondary", and parents have "university education" if they have "above secondary education".
- ▶ We calculate predicted wages using samples of couples in the United Kingdom and Spain from the last wave of the European Community Household Panel (ECHP) survey, and the Heckman (1979) technique. We bootstrap the standard errors in order to obtain corrected robust standard errors.

Results

Results for the UK

Table: SURE estimates on the time devoted to childcare, the UK

	Fathers Basic	Mothers childcare	Fathers Educational	Mothers childcare	Fathers Supervisory	Mothers childcare
Father's Secondary education	-0.253 (0.165)	-0.025 (0.128)	-0.162 (0.154)	0.206* (0.108)	0.121 (0.301)	0.064 (0.197)
Father's University education	-0.237 (0.253)	0.155 (0.183)	-0.487** (0.241)	0.187 (0.161)	-0.202 (0.521)	0.182 (0.283)
Mother's Secondary education	0.049 (0.181)	-0.127 (0.134)	0.286* (0.159)	-0.047 (0.113)	0.141 (0.361)	-0.026 (0.203)
Mother's University education	0.189 (0.274)	-0.012 (0.198)	0.525** (0.247)	0.143 (0.164)	0.479 (0.548)	0.160 (0.298)
Younger child 0-4	2.863*** (0.311)	2.562*** (0.200)	1.650*** (0.228)	1.514*** (0.157)	0.708* (0.398)	0.500** (0.252)
Younger child 5-12	1.710*** (0.269)	1.190*** (0.162)	1.086*** (0.217)	0.832*** (0.134)	0.971** (0.381)	0.629*** (0.234)
Father working	-0.917*** (0.264)	0.411** (0.179)	-0.397* (0.210)	(0.093) (0.144)	(0.135) (0.438)	(0.188) (0.246)
Mother working	0.319*** (0.116)	-0.577*** (0.104)	(0.098) (0.107)	-0.354*** (0.093)	(0.177) (0.251)	(0.114) (0.151)
R-Squared	0.169	0.290	0.114	0.159	0.024	0.027
Observations	1,527	1,527	1,527	1,527	1,527	1,527

Notes: Robust standard errors in parentheses. *Significant at the 90% level **Significant at the 95% level ***Significant at the 99% level. Sample includes all individuals from the United Kingdom between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. Survey weights are used to represent each day of the week equally. We include day of the week dummies (ref.: Sunday) to control for the day of the week.

Results for the UK

- ▶ *Educational childcare*: factors affecting the time devoted to such activity include the mother's education, non-labour income, the mother's health status and the number of family members.
- ▶ Fathers whose partners have secondary and tertiary education devote 0.286 and 0.525 more hours per day to *educational childcare*.
- ▶ Father's university education is associated with a decrease in the time devoted to *educational childcare* by fathers of 0.487 fewer hours per day.
- ▶ To the extent that there is positive assortative matching by education (Oppenheimer, 1988; Mare, 1991; Pencavel, 1998; Lewis and Oppenheimer, 2000; Blossfeld and Timm, 2003), highly-educated fathers match highly-educated mothers, and thus fathers with university education matching mothers with university education still devote 0.04 more hours per day to *educational childcare*.
- ▶ **The educational component influencing the time devoted by fathers to educational childcare is mother's education, the mother's time is not influenced by her educational level, nor by that of the father.**

Results for Spain

Table: SURE estimates on the time devoted to childcare, Spain

	Fathers Basic	Mothers childcare	Fathers Educational	Mothers childcare	Fathers Supervisory	Mothers childcare
Father's Secondary education	0.073 (0.106)	0.019 (0.085)	0.043 (0.123)	-0.172* (0.094)	-0.052 (0.185)	-0.015 (0.141)
Father's University education	0.396*** (0.132)	0.125 (0.115)	0.160 (0.151)	-0.075 (0.125)	0.288 (0.235)	0.139 (0.187)
Mother's Secondary education	0.391*** (0.113)	0.197** (0.090)	0.329** (0.129)	0.408*** (0.103)	0.307 (0.207)	0.218 (0.147)
Mother's University education	0.744*** (0.146)	0.429*** (0.128)	0.756*** (0.170)	0.904*** (0.143)	0.349 (0.278)	0.164 (0.213)
Younger child 0-4	2.523*** (0.149)	3.389*** (0.106)	2.205*** (0.163)	1.813*** (0.124)	0.821*** (0.193)	1.050*** (0.170)
Younger child 5-12	1.355*** (0.130)	1.621*** (0.081)	1.506*** (0.152)	1.406*** (0.110)	0.820*** (0.177)	1.098*** (0.156)
Father working	-1.034*** (0.224)	(0.218)	-0.744*** (0.241)	(0.094)	(0.367)	(0.179)
Mother working	0.400*** (0.062)	-0.603*** (0.054)	(0.092)	-0.366*** (0.074)	0.349*** (0.117)	(0.102)
Constant	-1.467 (0.937)	-2.892*** (0.821)	-1.536 (1.015)	-4.927*** (0.855)	-4.641*** (1.655)	-5.788*** (1.309)
R-Squared	0.202	0.412	0.101	0.095	0.011	0.026
Observations	4,499	4,499	4,499	4,499	4,499	4,499

Notes: Robust standard errors in parentheses. *Significant at the 90% level **Significant at the 95% level ***Significant at the 99% level. Sample includes all individuals from the United Kingdom between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. Survey weights are used to represent each day of the week equally. We include day of the week dummies (ref.: Sunday) to control for the day of the week

Results for Spain

- ▶ Mothers' education influences the time devoted by the parents to *basic childcare* and *educational childcare*.
- ▶ *Basic childcare*: fathers' and mothers' university education is positively associated with the time devoted by them to such activities \Rightarrow Father's university education is associated with an increase in the time devoted to basic childcare of 0.396 hours per day for fathers, while mother's university education is associated with an increase in the time devoted to basic childcare of 0.744 and 0.429 hours per day for fathers and mothers, respectively.
- ▶ *Educational childcare*: the main associations come from mother's education on fathers' and mothers' times \Rightarrow Fathers whose partners have secondary and tertiary education devote 0.329 and 0.756 more hours per day to this activity, respectively, and mother's with university education devote 0.904 more hours per day to such activities.
- ▶ **Mother's education is what matters in determining the time devoted to educational childcare by the couple.**

Relationship for types of childcare

Table: Correlation matrix of residuals

Panel A: The UK		Father			Mother		
		Physical childcare	Educational childcare	Supervisory childcare	Physical childcare	Educational childcare	Supervisory childcare
Father	Physical childcare	1	-	-	-	-	-
	Educational childcare	0.196	1	-	-	-	-
	Supervisory childcare	0.019	-0.002	1	-	-	-
Mother	Physical childcare	0.121	0.033	0.002	1	-	-
	Educational childcare	-0.039	0.147	-0.03	0.163	1	-
	Supervisory childcare	-0.018	0.037	0.157	0.008	-0.005	1
Panel B: Spain							
Father	Physical childcare	1	-	-	-	-	-
	Educational childcare	0.159	1	-	-	-	-
	Supervisory childcare	0.065	0.013	1	-	-	-
Mother	Physical childcare	0.194	0.044	0.015	1	-	-
	Educational childcare	0.028	0.224	-0.003	0.075	1	-
	Supervisory childcare	0.013	-0.004	0.377	0.016	0.025	1

Notes: Correlation matrix of residuals obtained from Tables 4 and 6. Sample includes all individuals from Spain between the ages of 21 and 65 (inclusive) living in a couple (married or cohabiting) and at least one child under the age of 18. Survey weights are used to represent each day of the week equally.

Conclusions

Conclusions

- ▶ Factors influencing parents' time devoted to childcare activities, with a focus on parents' education and educational childcare time, activities aimed at increasing the human capital of children.
- ▶ We use time use data from two European countries included in the Multinational Time Use Study, Spain (2002) and the United Kingdom (2000).
- ▶ We take into account that the time one parent spends on childcare activities may serve as a substitute for the time the other spends in the same activities, estimating a 6-equation Seemingly Unrelated Regression (SUR) tobit model.
- ▶ We find that mother's education is associated with an increase in the time devoted to educational childcare by fathers in both Spain and the United Kingdom, and that mother's education is associated with an increase in the time devoted to educational childcare by mothers in Spain \Rightarrow It seems that what really matters in determining the time devoted to educational childcare at the couple level is the educational level of the mother.
- ▶ The time both members of the couple devote to educational childcare is complementary in both Spain and the United Kingdom.

Conclusions

- ▶ We find differences at the country level \Rightarrow To what extent such differences between the two countries are explained by differences in the provision of public childcare services, on the one hand, or in the mothers preferences, on the other hand, is worthy of analysis.
- ▶ Limitations:
 1. We cannot ascertain whether differences by education arise from different preferences, or different productivities in the provision of childcare.
 2. We only consider childcare reported as primary childcare, as main activity, despite prior evidence showing that primary childcare cannot be equated with time that parents spend with their children (Folbre et al., 2005), and childcare reported as primary activity substantially underreports total childcare time (Budig and Folbre, 2004; Folbre and Bittman, 2004; and Bianchi, Wight, and Raley, 2006).