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**EUROPEAN MOTHERS' TIME WITH CHILDREN:
DIFFERENCES AND SIMILARITIES ACROSS 9 COUNTRIES**

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Jutta M. Joesch

Battelle and University of Washington, Seattle, USA

joesch@battelle.org

C. Katharina Spiess

DIW Berlin and Technical University Berlin, Germany

kspiess@diw.de

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Abstract

In this paper, we describe and compare the number of hours per week mothers of children under 16 years of age spent with children in nine European countries in 1996. In addition, we explore to what extent socio-demographic characteristics and employment status contribute to differences in maternal time with children across the countries. The data for the study are from the 1996 wave of the European Community Household Panel. We find considerable differences in the amount of time mothers spend with children. However, only a small amount of these differences is explained by socio-demographic characteristics and employment status.

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Children's development is an important topic of interest. This interest raises concerns with how children are cared for, as more mothers enter the labor force and more children live with single parents. Time with parents is considered an investment in children and is thought to be crucial for children's cognitive and social-emotional development and educational outcomes. Indeed, some regard the time parents devote to children an important form of intergenerational transfer of wealth (e.g., Hill & Stafford 1985).

Few studies have investigated how much time parents in Europe spend with their children. Fewer studies have investigated whether the amount of time differs from country to country. In this paper, we document and compare the number of hours per week mothers of children under sixteen years of age spent with children in nine European countries in 1996. Developing policies aimed at supporting families and/or women's employment will be aided by knowledge of the amount of maternal time spent with children. Additionally, understanding what socio-demographic factors and employment factors are related to the amount of time mothers spend with children is important. Finally, investigating differences in maternal time with children across countries is a step towards understanding the impact of policies aimed at supporting families and employment. Beyond addressing these issues, we also explore some of the reasons that may contribute to observing differences in maternal time with children in the nine countries, to the extent possible with the available data.

The data for the study are from the 1996 wave of the European Community Household Panel. The European Community Household Panel collects information from nationally representative samples of households in 14 European countries. We use data from 9 countries and from households in which all children were under 16 years at the time the survey was conducted. We find considerable differences across countries in the amount of time mothers spend with children. However, only a small amount of these differences is explained by socio-demographic characteristics and employment status.

Mothers' Time with Children

Most empirical investigations on the allocation of parental time to children have been conducted for countries other than those in Europe. Some recent examples include a study for Australia by Miller and Mulvey (2000), studies for Canada by Douthitt (1989) and Gauthier et al. (2001), and for the United States by Bryant and Zick (1996a/b), Bianchi (2000), and Sandberg and Hofferth (2001). For Europe, studies with a focus on time spent in domestic tasks are available for Finland (Kirjavainen &

Barclay 1990), Sweden (Gustafsson & Kjulin 1994), Switzerland (Sousa-Poza, Schmid, Widmer 2001), and the United Kingdom (Jenkins & O'Leary 1995). The European studies are based on data gathered with a variety of instruments, at different points in time, and from samples with different compositions. The studies also use different definitions of domestic work, not all of which include the care of children. As such, these studies are not well suited to describe and compare how much time European mothers spend caring for children and to examine why the amount of time may differ from country to country. However, previous time-use studies provide useful information to guide our cross-country comparison.

The goal of the cross-country comparison is to gain insights into reasons for differences in maternal time spent with children. We conduct a multivariate analysis that incorporates correlates of time use that may differ across countries; to investigate to what extent these correlates explain differences in time use. For instance, infants require more time than older children. Thus, if the age distribution of children varies from country to country, we would expect to observe differences in the average amount of time mothers in different countries spend with children, regardless of country-specific family policies. However, if we still observe cross-country differences in time use after adjusting for the ages of children in each country, then differing cultural norms or public policies may be factors that contribute to differences in mothers' time use.

Our selection of correlates of maternal time with children is guided by the neoclassical microeconomic model of the household (e.g., Becker 1981) and extant empirical time use studies. The microeconomic model of the household is premised on the notion that individuals attempt to generate well-being for themselves and their family by allocating limited financial and time resources in accordance with their preferences and available technology. In the specific focus of this study, mothers are thought to derive satisfaction from bringing up and enjoying well-adjusted children, from consuming market- and home-produced goods and services, and from non-work time. Realizing these goals requires mothers to make decisions about the amount of time spent caring for children, how much time to spend earning money, and what type and amount of goods and services to purchase or produce at home. Making these decisions involves trade-offs, since limited resources compete for alternative uses. According to this framework, how much time a mother spends with children depends on the price of her time, the prices of goods and services used, the determinants of technology, the family's financial resources, and the mother's preferences. We next present correlates of mothers' time with children included in the multivariate analysis.

Correlates of time with children

Number and ages of children. How old her children are plays a central role in a mother's decision on how much time to spend with them. A small child greatly enhances the value of a mother's time

spent at home by creating more opportunities for joint production and economies of size. As children grow up they become more goods- rather than time-intensive. This influences the trade-off between working at home and employment and reduces a woman's incentive to engage in paid work and find substitute care until her child is more independent (Bryant, 1990). In addition, most parents' preferences are such that they want to do what is best for their children. Children's physiological, cognitive and socio-emotional needs vary by age, and their changing needs influence the kind of care that is most appropriate. There is evidence that parents select different types of child care depending on the child's age (Blau, 1991; Leibowitz, Waite, & Witsberger, 1988; Ondrich & Spiess 1998; Veum & Gleason, 1991). For example, young children are more likely to be cared for exclusively by their parents than older children. Thus, we expect a negative relationship between the amount of time a mother spends with children and the age of her children, all else equal. Several earlier use studies have found that the amount of time parents spend on child care decreases as children become older (e.g., Douthitt 1989; Gustafsson & Kjulin 1994).

The more children in a family, the more opportunities there are for joint production and economies of size, enhancing the value of the mother's time spent at home. In addition, the more children, the more financial resources parents have to give up to obtain substitute care. Thus, we expect a positive relationship between the number of children in a household and the amount of time the mother spends with children. This expected relationship has been reported in previous empirical time use studies on domestic work (e.g., Jenkins & O' Leary 1995; Miller & Mulvey 2000; Sousa-Poza, Schmid, & Widmer 2001).

Several factors address the availability of substitutes for the mother's time: the number of adults in the household other than the partner, the mother's marital status, and her partner's employment status. By considering the father's employment status as a correlate of mothers' time use, we follow the literature in assuming that the father's employment decision is exogenous to the mother's child care and employment decisions (e.g., Blau & Hagy 1998; Michalopoulos & Robins 2000; Michalopoulos, et al. 1992). This assumption may be inappropriate for some households. Empirical evidence from the U.S. suggests that it was adequate in national data (Mroz 1987), at least in the past.

Adult family members. Adults who share a household with a family are a potential source of inexpensive child care. At the same time, not every adult is a qualified provider in the eyes of the parents, or is free to be a caregiver. Women tend to be called upon more for child care duties than men, but many women are now in the labor force, and thus not available. While grandparents may be less likely to have employment responsibilities, they may have other restrictions that limit their ability to help with child care, such as health problems.

Mother's marital status. Single mothers do not have a partner with whom to share household tasks. One, might, therefore, expect single mothers to have less time for their children, than otherwise similar mothers who live with a partner. There is some evidence of a negative relationship between being a single parent and the amount of domestic work time. However, estimates of the relationship between being a single parent and the amount of time spent caring for children are mixed. The relationship is not statistically significantly different from zero in some studies (Miller & Mulvey 2000; Sousa-Poza et al. 2001), and negative in another (Sandberg & Hofferth 2001). According to Gauthier et al. (2001), single mothers who have at least one child under five spent more time with children than married, employed mothers, but less time than married, non-employed mothers.

Father's employment status. When a father lives in the household but is employed, he obviously has less time available to take care of the children, or share other domestic tasks, than when he is not employed. Gustafsson & Kjulin (1994) report that women whose husband works do spend more time in child care, *ceteris paribus*.

Mother's education level. A person's education level may affect time use through its impact on productivity in generating home produced goods and services, lifestyle preferences, and attitudes and values. Parents with different educational backgrounds may also bring different aspirations to child rearing. In some past time use studies more highly educated mothers have been found to spend more time with their children (e.g., Hill & Stafford 1985; Leibowitz 1974; Sandberg & Hofferth 2001), holding other factors constant.

Mother's age. Older mothers' preferences towards time with children may differ from those of younger mothers, due to differences in values and knowledge influenced by different and additional life experiences. In addition, more experience with household tasks is likely to increase household productivity which may, in turn, influence the amount of time spent with children, *ceteris paribus*. The evidence on the relationship between the mother's age and time with children is mixed. According to at least one study, there is a negative relationship between the mother's age and time spent with children (Gustafsson & Kjulin 1994). Others find an inverted U-shaped pattern that indicates that younger and older age groups allocate less time to child care than women between 25 and 34 years of age (Miller & Mulvey 2000). Yet others do not find a relationship that differs from zero (Sousa-Poza et al. 2001). All three studies referenced above took into account the ages of children who live in the household. Thus, the mixed findings are unlikely the result of a life cycle effect.

Mother is "foreign". There are cultural differences in attitudes towards child rearing. Thus, mothers who are not native to the country in which they reside may have different attitudes than native

mothers towards spending time with children. In the case of Switzerland, Sousa-Posa et al. (2001) find that foreign women tend to spend more time on housework than Swiss women. However, for time spent caring for children, their estimate that distinguishes foreign and Swiss mothers is not statistically significantly different from zero.

Family financial resources. A family's financial resources can come from a variety of sources. We distinguish mother's earnings and family income other than the mother's. Additional income increases the demand for a good, if the good is desirable, and decreases it otherwise, all else constant. If a mother considers caring for children herself more appropriate and/or desirable, we would expect her to spend more time with children, the more financial resources her family has, *ceteris paribus*.

In addition to taking into account family income other than the mother's, we include the mother's earnings in our empirical model. Since we are also controlling for the mother's employment status, the mother's earnings reflect an income effect, rather than a substitution and an income effect. As in the case of family income other than the mother's, a mother who earns more money than an otherwise comparable mother has more opportunity to spend time with children. She may, for example, opt to free up the time she spends with household chores by getting help cleaning the house or relying on other time-saving devices.

Household technology. Housework-related technology provides mothers with the opportunity to free up their time from household chores and have it available to spend with their children, instead. However, according to Gustafsson and Kjulin's results for Sweden (1994), owning a dishwasher was not statistically significantly related to the amount of time mothers spent caring for children, and having a kitchen machine had a negative effect.

Mother's employment status. Given the concern and interest in the impact of mothers' employment on time spent with children, we include measures of the mother's employment status in our empirical analysis. Given the limited amount of time available in a day, otherwise comparable mothers who are employed, have less time to devote to the care of their children than mothers who do not work for pay. Self-employment can offer more flexibility with respect to arranging one's schedule. A mother who is self-employed may, for example, choose to do some of her work while her children sleep, to have more time with them during the day, than a mother who works a standard schedule, everything else the same.

Nevertheless, even a self-employed mother has fewer hours in the day available to care for her children than a mother who is not.

Not surprisingly, employment status is, indeed, a significant determinant of child care time in, for instance, Douthitt's (1989) study of Canadian data, Kirjavainen and Barclay's (1994) comparison of Finnish and U.S. households, Bryant and Zick's (1996a) study of historical trends in the time spent caring for children in the U.S., and Sandberg and Hofferth's (2001) analysis of changes in children's time with parents in the U.S. between 1981 and 1997. At the same time, Gershuny and Robinson (1988) report for the U.S., that although employed mothers spend less time in child care than non-employed mothers, between the 1960s and 1980s there has been an increase in the amount of time employed mothers spend with their children. Bryant and Zick (1996a) also conclude that, even after taking into account mothers' increased attachment to the work force, U.S. mothers in two-parent families spent more time on child care per child by the early 1980s than in the mid-1920s.

The economic model sketched above suggests that how much time a mother spends in market work and how much time she spends with her children is simultaneously determined. Thus, if time with children is estimated as a function of the mother's actual employment, the estimates may be biased and inconsistent due to simultaneous equations bias. To avoid this possibility, we use a predicted measure of the mother's employment status. We describe its construction in the section on measures, below.

Data and Methods

Analysis Sample

Our analysis is based on data from the European Community Household Panel (ECHP). The ECHP is a large-scale survey organized and funded by the European Union.¹ The purpose of the ECHP is to gather individual-level information that is comparable across European countries. Topics of interest include: employment and unemployment experiences, earnings, household wealth, household expenditures, and household living conditions. The first wave of ECHP data was collected in 1994 in twelve countries of the European Union. Additional waves covering up to 15 countries were conducted annually in subsequent years. The most current wave of data available at the time we began our analysis was collected in 1996. In 1996, the following countries participated in the survey: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom.

The ECHP data offer several advantages for our analysis. One, in each country, the ECHP sample is nationally representative of the same population of interest, namely, all private households in the national territory. Two, the country-specific samples are relatively large. The number of households

¹ For further details see EUROSTAT (1996a,b), Clémenceau and Verma (1996), Wirtz and Mejer (2002), <http://forum.europa.eu.int/Public/irc/dsis/echpanel/library>

participating in the 1996 survey range from 933 in Luxembourg to 7,132 in Italy. Three, information on time spent with children is collected from all mothers, rather than a subset of mothers, such as employed women. Finally, and most importantly, it was intended to conduct the interviews with standardized questionnaires to make the data directly comparable across the participating countries.

For the analysis sample, we selected households in which all children were under 16 years at the time the survey was conducted. From the remaining sample we excluded a small number of cases (less than five per country) in which more than one mother or more than one father resided in the household, to avoid a potential ambiguity in how parents and children in the household are related.

In a few countries, a considerable portion of mothers reported not spending any time with children under 16 years of age as part of their normal activities. These countries are Belgium, Finland, France, and Portugal.² The ECHP is not the first European survey to find such a result. Sousa-Poza, Schmid, and Widmer (2001) report that 14% of females with children under the age of 14 did not spend any time on child care according to the 1997 Swiss Labour Force Survey. And Gustafsson and Kjulín (1994) note that more than 50% of the households in their Swedish sample have a value of zero for time spent on child care.³ While it is possible that some mothers spend very little time with their children, especially when the children are older, we were, nevertheless, concerned about the relatively large percentage of women in these countries who reported not spending any time with children. Further investigation revealed that, despite intentions to the contrary, the ECHP time-use questions were not equivalent in all countries participating in the survey. We therefore excluded from the analysis the four countries for which the survey questions regarding time spent with children were not comparable.

Missing data reduced the sample usable for analysis; 175 cases had incomplete information on the amount of time spent with children, and 68 observations had missing data on income. Our final analysis sample consists of 7,445 cases.

Measures

Measures of the amount of time spent with children

Information on time use is typically collected in one of three ways: with time sampling, with time diaries, or with retrospective survey questions. In time sampling, study participants are asked to

² In Italy, the variable on time spent with children was top-coded at 70 hours per week. As this top-coding impacts the mean time spent with children, we also excluded Italy from the analysis.

record the activities they are engaged in when a beeper or similar device goes off. While time sampling provides valid information on how individuals spend their time, the data collection approach is costly and intrusive. In the case of diaries, study participants are asked to record in detail in time diaries that cover 24-hour time periods how they spend their day, including activities that may take as little as five minutes. Diaries have been shown to provide valid and reliable information on time use (Gershuny & Robinson 1988; Juster & Stafford 1985). However, cost considerations have limited the use of time diaries for data collection. Retrospective survey questions are the most common method of collecting time use information. In this approach respondents are asked to recall how much time they spent during a particular time period in certain activities. Unfortunately, in some cases this approach has been shown to generate inaccurate time use information (Juster & Stafford 1985).

The ECHP collected information on time spent with children through retrospective survey questions. Each household member 16 years of age and older was asked whether their normal daily activities, apart from any job or business, includes looking after children without pay, and the weekly amount of time spent in this activity. The questions did not distinguish between the physical or non-physical care of children or between direct care or adult-child shared time. Adult-child shared time refers to activities other than the direct care of children, such as children helping parents with household tasks. In addition, the ECHP survey did not collect information on the amount of time each adult spent with each child in the household, but rather on the total amount of time each adult spent caring for children per week. Thus, the measure of mothers' time with children in the ECHP is not optimal, as far as time use researchers are concerned. On the other hand, the ECHP is the only data source with comparable time use information for several European countries based on nationally representative samples. Since our focus is on a cross-country comparison of mothers' time with children, it should be possible to explore differences across countries, as long as the survey questions regarding time-use are comparable across countries.

Measures of correlates of time spent with children

As noted, in addition to describing how much time mothers in nine European countries spend with their children, we explore some possible reasons for observing differences. We begin this exploration by comparing the average amount of time mothers in different countries spent with children, after controlling for cross-country differences in socio-demographic factors. To the extent that socio-demographic population characteristics differ from country to country, these characteristics contribute to observing differences in maternal time use in the nine countries considered here. For instance, how many preschoolers a family has, can have a considerable influence on the amount of time a mother

³ However, it is not clear from Gustafsson and Kjulin's manuscript whether the percentage is this large for households with at least one child under the age of twelve years.

spends caring for children. The factors capture constraints, heterogeneous preferences, and technology that can differ from country to country, but they should not reflect the influence of family policies on time use decisions. The corresponding variables are summarized in Table 1. Descriptive statistics can be found in Table 2.

[Tables 1 and 2 here]

Specifically, we control for the number and ages of children in the household, the number of adults who live in the household, the mother's marital status, the father's employment status, the mother's education level and age, whether the mother is "foreign", and whether the household has a dishwasher. If the distributions of these factors differ from country to country, we would expect to observe differences in how much time mothers spend with children that are not due to policy influences. However, if mothers' time with children still differs across countries after controlling for the factors listed above, then additional explanations are needed.

We represent the number and ages of children who live in the household with several variables. The variables measure the number of children in the household who are less than one year of age, who are one to two years old, three to five years old, six to twelve years old, and 13 to 15 years old. The mother's marital status is measured with a dummy variable that indicates whether she is a single parent. Whether the mother's time with children is related to having adults living with the family is addressed with a variable of the number of adults other than the parents who live in the household. We account for the mother's education level with two dummy variables: whether the mother has a "high" education level and whether the mother has a "medium" education level. The measures of education available in the ECHP are based on the categories developed by ISCED (the International Standard Classification of Education).⁴ We measure the mother's age as age in years and age squared. Whether the mother is "foreign" is represented with a dummy variable. The dummy variable reflects whether the mother's nationality differs from the country in which she resides. Similar to Gustafsson and Kjulin (1994), we measure household technology with a dummy variable that indicates whether the household has a dishwasher. Family financial resources are measured with (1) yearly household income from work net of mother's, and (2) yearly non-work household income. Both figures are expressed in Euro.

After presenting information on the average amount of time mothers spent with children in the nine countries controlling for differences in socio-demographic factors across countries, we expand the multivariate model with measures of employment status. Mothers' employment decisions are influenced by policies related to parental leave regulations, the tax treatment of the "wife's" earnings,

the availability and price of child care, children's school schedules (e.g., Gornick 1997), to name a few. In our analysis, we are not able to disentangle these effects. However, we include in the multivariate model measures of the mother's earnings and her employment status. To address the possibility of simultaneous equations bias arising from a simultaneous determination of time spent in market work and time spent with children, we use a predicted value of the mother's employment status. Specifically, we estimate a multi-nomial logit model of whether a mother is not employed, employed part-time, or employed full-time (multinomial results can be found in Table A1 in the Appendix). We then predict for each mother in the sample her probability of being in each of the three employment states and use the predicted probabilities to generate dummy variables of whether a mother works part-time or full-time.⁵ In addition, we incorporate self-employment into the empirical model with a dummy variable.

Estimation

As noted, we excluded from the analysis data from five countries for which the survey questions regarding time spent with children or the coding are not comparable. In the remaining nine countries that participate in the ECHP, a small number of mothers reported not spending any time with children. As a result, the outcome measure for the multivariate analysis is a limited-dependent variable. Consistent with prior analyses of time use (e.g., Gustafsson & Kjulin 1994; Sousa-Poza, Schmid, & Widmer 2001), we estimated Tobit models of mothers' time with children. For each country we estimated a separate model of mothers' time with children, to allow for the possibility that parameter estimates vary across countries. The results from these estimations can be found in the Appendix (Table A1).

To compare the amount of time mothers in different European countries spend with children, we then proceeded as follows. First we combined country-specific data ECHP to create a "synthetic" European sample. To give each country the same weight, we randomly selected two hundred

⁴ See http://www.uis.unesco.org/en/act/act_p/isced.html

⁵ To do so, we first take the predicted probabilities for the three employment states and turn them into a cumulative distribution. The cumulative distribution is generated by assigning a cumulative value to each employment state (event). The cumulative value for a particular event is the sum of the previous probabilities plus the probability of the event of interest. For instance, if the probabilities of three events are 0.3, 0.5, and 0.2, respectively, then the cumulative values are 0.3, 0.8, 1.0. We determine the value of the employment dummy variables by first choosing a random number from a random variable distributed uniformly over the interval 0-1, and then assigning the event that has the smallest cumulative value that is larger than the random number. To continue the above example, given a random number between 0 and 1 of, say, 0.734, we would assign the second event, since its cumulative value is 0.8 (the smallest one larger than 0.734).

households from all 14 countries for this synthetic European sample.⁶ In the next step, we predicted for each country, based on that country's specific multivariate results, time with children for all mothers in the synthetic European sample. These predicted values represent the amount of time European mothers would spend with children, if they lived in the particular country. We present and discuss the results from this analysis next.

Results

Figure 1 shows the average amount of time per week mothers in nine European countries reported spending with children in 1996. The averages across the nine countries range from a minimum of 37 hours per week to a maximum of 73 hours a week. This is a considerable difference, even when one considers that these figures do not take into account differences in the number of children across countries, or how old the children are, two factors that are central to the amount of time spent with children.

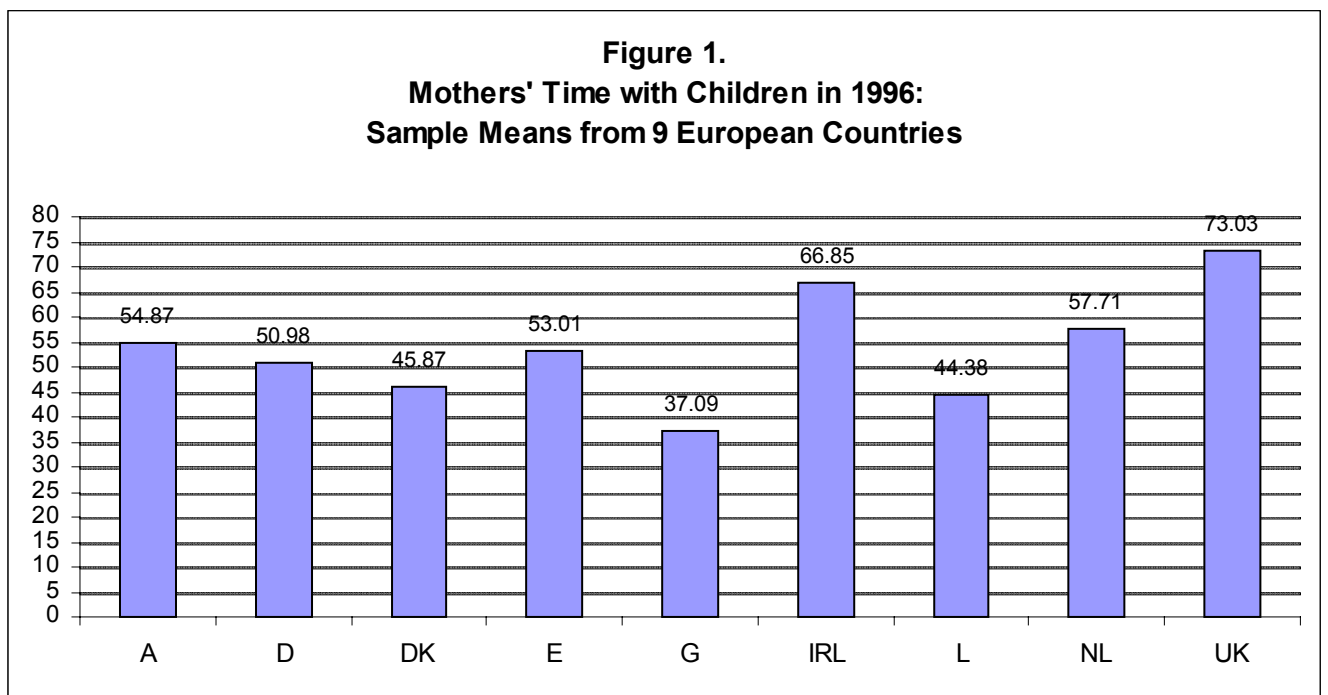
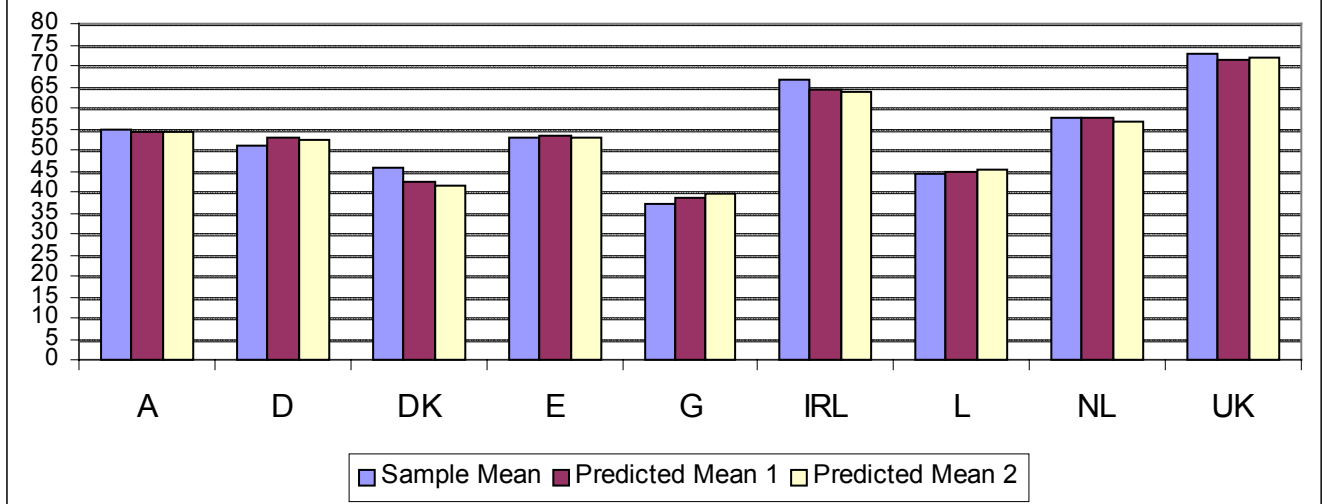


Figure 2 displays the same sample means together with two predicted means. Predicted mean 1 represents the amount of time mothers in each country would have spent with children in 1996 if they had had the socio-demographic characteristics of a representative sample of European mothers. The second predicted mean includes the additional effects of employment status. The three means are also reported in Table 3 by country.

⁶ Sweden was not part of the 1996 survey, which leaves us with a total of 14 countries.

Figure 2.
Mothers' Time with Children in 1996:
Sample and Predicted Means from 9 European Countries



Several results of interest emerge from a comparison of the sample and estimated mean values. One, the first predicted means do differ from the sample means, that is, controlling for socio-demographic characteristics makes a difference. The differences range from less than one minute per week to over 3.5 hours per week. For instance, if mothers in Germany had socio-demographic characteristics representative of mothers across Europe, on average, they would spend approximately two more hours (2.08) per week with children, than the actual mothers who lived in Germany in 1996.

Two, adjusting for employment status changes the relative differences across countries somewhat. To continue the earlier example of Germany, the gap in the difference between time with children by mothers in Germany and German mothers with European socio-demographic characteristics reduces to an estimated 1.3 hours after employment status is considered. In contrast, the time gap increases for mothers in Denmark from about 3.6 to 4.3 hours per week compared to Danish mothers with European characteristics.

However, at the same time, it should be noted that the differences between the sample and predicted means are small relative to the much larger differences across countries. These larger differences are, therefore, not well explained by either the socio-demographic factors or the employment status information that are included in the multivariate model.

With respect to estimates of specific coefficients, not surprisingly, the ones for number and ages of children have the largest values in absolute terms. The coefficients are consistently significantly different from zero and positive, except for the oldest age category (children 13-15 years). In addition, the younger the children, the larger the estimated coefficient. With few exceptions, the estimates for the mother's employment status are negative, but more estimates are not significantly different from zero than are. The estimates for household income net of the mother's are positive for six of the nine countries, but only two of these estimates are significantly different from zero. For two of the nine countries is there a significant estimate for single parent status: one of the estimates is positive and the other negative. The coefficient estimates for the remaining variables tend not to be statistically significantly different from zero. An example of coefficient estimates for one country is provided in Table 4.

Discussion

The results presented in this paper suggest that there are considerable differences across nine European countries in the amount of time mothers spend with children under 16 years of age. Only a small amount of these differences is explained by socio-demographic characteristics and employment status. There are several reasons why this may be the case. On the methodological side, we have not investigated how robust our results are with respect to model specifications. By model specification we mean which variables are included in the empirical model of mothers' time with children, as well as their functional form (e.g., linear vs. polynomial vs. spline). Another possible methodological reason for the differences is that the questions used by ECHP to elicit the time use information are not interpreted in the same way by respondents from different countries. It is, furthermore, conceivable that systematic differences in social desirability lead mothers from some countries to report spending more time with children than they actually did.

Aside from methodological reasons, cultural differences are an obvious explanation. Finally, it is possible that policy differences across the nine countries contribute to the observed differences in time spent with children. For instance, Germany and Austria are both countries with a relatively extensive parental leave period (e.g., Bundesministerium für Familie, Senioren, Frauen und Jugend 1998). However, as the percentage of mothers with children in the appropriate age groups is relatively low (see Table 2), differences in parental leave policies can hardly explain the substantial differences in time with children across countries. Another policy explanation might be the provision of child care. Among the countries covered in our analysis, the child care provision rates are highest in Denmark (this is true for children in all age groups); whereas countries such as Ireland, Greece and Spain are characterized by substantially lower child care provision rates (e.g. Netzwerk Kinderbetreuung 1996). To the extent that the availability and cost of child care influence mothers' employment status, this effect is included indirectly in our analysis. However, if parents who have the option to use child care

do so when the mother is not employed, this could explain some of the variation across countries. For mothers with older children, differences in school schedules might play another role in explaining cross-country differences. In Germany and Austria, for instance, children usually go home for lunch (e.g., Gornick et al. 1997), which most probably increases the time parents spend with their children.

This paper provides a first look at the amount of time mothers in Europe spend with children based on a European-wide data source. The significant differences found from country to country may have important implications for the well being of children. Further work is needed to confirm this initial evidence and to investigate reasons for the differences.

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TABLE 1. VARIABLE DEFINITIONS

| Variable | Definition |
|--------------------------------------|---|
| Mother's Time with Children | hours/week mother spent looking after children without pay, as part of her normal, daily activities apart from any job or business |
| <u>Mother</u> | |
| Age | Mother's age at interview, years and years squared |
| <i>Education</i> | |
| Low | omitted reference category for mother's education |
| Medium | 1 if mother has completed secondary education (ISCED 3) that began when she was 14-15 years old and that lasted about 3 years, 0 otherwise |
| High | if mother has completed secondary education (ISCED 5-7) that began when she was 17-18 years old, and either (1) lasted at least 3 years and lead to university or postgraduate degree; or (2) lasted about 4 years and lead to an award not equivalent to first university degree |
| <i>Employment Status (Estimated)</i> | |
| Not in labor force | omitted reference category for mother's employment status |
| Employed part-time | 1 if mother works 29 hours/week or less, 0 otherwise |
| Employed full-time | 1 if mother works 30 or more hours/week, 0 otherwise |
| Self-Employed | 1 if mother is self-employed, 0 otherwise |
| Foreign | 1 if mother's nationality differs from the country of residence, 0 otherwise |
| Single Parent | 1 if mother does not live with a partner, 0 otherwise |
| <u>Father</u> | |
| Employment Status | 1 if father is employed, 0 otherwise |
| Employment missing | 1 if information about father's employment status is missing, 0 otherwise |
| Self-employed | 1 if father is self-employed, 0 otherwise |
| <u>Household Characteristics</u> | |
| <i>Children</i> | |
| < 1 years | number of children in household who are less than 1 year old |
| 1-2 years | number of children in household between 1 and less than 3 years old |
| 3-5 years | number of children in household between 3 and less than 6 years old |
| 6-12 years | number of children in household between 6 and less than 13 years old |
| 13-15 years | number of children in household between 13 and less than 16 years old |
| Dishwasher | 1 if household has dishwasher, 0 otherwise |
| <i>Income</i> | |
| Work Income | Yearly household income from work, net of mother's earned income |
| Non-work Income | Yearly household income from sources other than employment |
| Number of Adults | Number of persons 18 years of age or older who live in the household. |

TABLE 2. DESCRIPTIVE STATISTICS BY COUNTRY

| Variable | A | D | DK | E | G | IRL | L | NL | UK |
|----------------------|---------------|---------------|---------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Time with Children | 54.87 (28.6) | 50.98 (25.0) | 45.87 (29.8) | 53.01 (27.3) | 37.09 (18.8) | 66.85 (26.9) | 44.38 (24.6) | 57.71 (24.9) | 73.03 (25.7) |
| <i>Mother</i> | | | | | | | | | |
| Age | 33.61 (6.04) | 35.07 (5.61) | 34.44 (6.14) | 34.36 (5.95) | 33.40 (6.60) | 34.85 (6.52) | 34.79 (5.78) | 35.76 (5.39) | 34.02 (6.05) |
| Education | | | | | | | | | |
| - Medium | 0.68 (0.47) | 0.58 (0.49) | 0.40 (0.49) | 0.21 (0.41) | 0.34 (0.47) | 0.48 (0.50) | 0.33 (0.47) | 0.59 (0.49) | 0.41 (0.49) |
| - High | 0.09 (0.30) | 0.17 (0.38) | 0.41 (0.49) | 0.21 (0.41) | 0.28 (0.45) | 0.14 (0.35) | 0.14 (0.35) | 0.19 (0.39) | 0.21 (0.41) |
| Employment | | | | | | | | | |
| - Part-time | 0.24 (0.43) | 0.31 (0.46) | 0.11 (0.32) | 0.08 (0.26) | 0.08 (0.27) | 0.21 (0.41) | 0.28 (0.46) | 0.49 (0.50) | 0.32 (0.47) |
| - Full-time | 0.42 (0.49) | 0.29 (0.45) | 0.66 (0.47) | 0.28 (0.45) | 0.36 (0.48) | 0.29 (0.45) | 0.29 (0.35) | 0.10 (0.30) | 0.26 (0.44) |
| - Self-employed | 0.10 (0.30) | 0.03 (0.17) | 0.03 (0.16) | 0.05 (0.22) | 0.08 (0.27) | 0.03 (0.17) | 0.04 (0.20) | 0.04 (0.21) | 0.07 (0.25) |
| Foreign | 0.05 (0.22) | 0.04 (0.20) | 0.04 (0.19) | 0.01 (0.10) | 0.02 (0.13) | 0.02 (0.12) | 0.39 (0.49) | 0.02 (0.13) | 0.03 (0.17) |
| Single Parent | 0.10 (0.30) | 0.10 (0.31) | 0.11 (0.32) | 0.03 (0.17) | 0.03 (0.16) | 0.06 (0.23) | 0.07 (0.26) | 0.06 (0.24) | 0.18 (0.38) |
| <i>Father</i> | | | | | | | | | |
| Employment | | | | | | | | | |
| - Employed | 0.81 (0.39) | 0.81 (0.39) | 0.78 (0.41) | 0.80 (0.40) | 0.88 (0.32) | 0.75 (0.43) | 0.86 (0.35) | 0.86 (0.35) | 0.71 (0.45) |
| - Self-employed | 0.12 (0.32) | 0.08 (0.27) | 0.06 (0.24) | 0.17 (0.38) | 0.37 (0.48) | 0.20 (0.40) | 0.09 (0.28) | 0.07 (0.25) | 0.14 (0.34) |
| - Empl. info missing | 0.05 (0.22) | 0.05 (0.21) | 0.04 (0.19) | 0.05 (0.22) | 0.04 (0.20) | 0.08 (0.28) | 0.04 (0.19) | 0.03 (0.18) | 0.03 (0.17) |
| <i>Household</i> | | | | | | | | | |
| Children, Number | | | | | | | | | |
| - Less than 1 year | 0.08 (0.27) | 0.03 (0.18) | 0.05 (0.23) | 0.08 (0.28) | 0.11 (0.31) | 0.11 (0.31) | 0.06 (0.23) | 0.04 (0.20) | 0.10 (0.30) |
| - 1 to 2 years | 0.22 (0.43) | 0.14 (0.35) | 0.30 (0.49) | 0.22 (0.43) | 0.19 (0.41) | 0.30 (0.48) | 0.20 (0.41) | 0.25 (0.46) | 0.22 (0.44) |
| - 3 to 5 years | 0.37 (0.55) | 0.34 (0.54) | 0.40 (0.55) | 0.36 (0.52) | 0.36 (0.55) | 0.53 (0.61) | 0.42 (0.59) | 0.41 (0.61) | 0.43 (0.61) |
| - 6 to 12 years | 0.88 (0.85) | 0.99 (0.85) | 0.79 (0.79) | 0.79 (0.75) | 0.80 (0.79) | 1.04 (0.98) | 0.88 (0.79) | 1.00 (0.90) | 0.93 (0.86) |
| - 13 to 15 years | 0.28 (0.54) | 0.29 (0.51) | 0.23 (0.46) | 0.24 (0.47) | 0.31 (0.56) | 0.29 (0.55) | 0.27 (0.54) | 0.27 (0.53) | 0.24 (0.50) |
| Dishwasher | 0.68 (0.47) | 0.64 (0.48) | 0.60 (0.49) | 0.21 (0.41) | 0.33 (0.47) | 0.35 (0.48) | 0.73 (0.45) | 0.39 (0.49) | 0.31 (0.46) |
| Income (1,000 Euro) | | | | | | | | | |
| - Work income | 18.42 (13.52) | 20.31 (15.93) | 17.87 (12.15) | 10.81 (8.51) | 10.02 (6.55) | 14.21 (17.36) | 27.46 (17.46) | 18.63 (16.93) | 13.42 (13.16) |
| - Non-work income | 1.00 (3.70) | 1.03 (3.64) | 12.10 (8.78) | 0.36 (2.27) | 0.65 (1.77) | 0.24 (1.60) | 0.92 (2.69) | 0.35 (1.86) | 0.56 (2.42) |
| Number of adults | 2.21 (0.91) | 1.93 (0.38) | 1.90 (0.34) | 2.24 (0.80) | 2.32 (0.76) | 2.11 (0.65) | 2.05 (0.51) | 1.95 (0.26) | 1.86 (0.47) |
| Sample Size | 689 | 829 | 583 | 1,331 | 1,098 | 764 | 207 | 1,103 | 841 |

TABLE 3.
MOTHERS' TIME WITH CHILDREN IN 1996:
SAMPLE AND PREDICTED MEANS FROM 9 EUROPEAN COUNTRIES

| | A | D | DK | E | G | IRL | L | NL | UK |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Sample Mean | 54.87 (28.56) | 50.98 (25.00) | 45.87 (29.82) | 53.01 (27.28) | 37.09 (18.77) | 66.85 (26.88) | 44.38 (24.60) | 57.71 (24.93) | 73.03 (25.65) |
| Predicted Mean 1 | 54.09 (13.10) | 53.06 (12.76) | 42.30 (18.26) | 53.35 (13.10) | 38.41 (7.13) | 64.50 (10.63) | 44.60 (14.63) | 57.78 (12.08) | 71.61 (11.21) |
| Predicted Mean 2 | 54.07 (13.69) | 52.33 (13.07) | 41.54 (18.72) | 52.94 (14.11) | 39.51 (7.71) | 63.99 (10.83) | 45.15 (16.17) | 56.70 (12.98) | 72.10 (11.53) |

Standard deviation in parentheses

Predicted Mean 1 represents the amount of time mothers in each country would have spent with children in 1996 if they had had the socio-demographic characteristics of a representative sample of European mothers.

Predicted Mean 2 represents the amount of time mothers in each country would have spent with children in 1996 if they had had the socio-demographic and employment characteristics of a representative sample of European mothers.

TABLE 4. TOBIT MODEL OF MOTHER'S TIME WITH CHILDREN IN 1996
(THE NETHERLANDS)

| Variable | Coefficient Estimate | Standard Error | P > t |
|--------------------------------------|----------------------|----------------|--------|
| <i>Mother</i> | | | |
| Age | -0.15 | 1.46 | 0.92 |
| Age squared | -0.01 | 0.02 | 0.58 |
| Education | | | |
| - Medium | 0.90 | 1.89 | 0.64 |
| - High | -5.07 | 2.50 | 0.04 |
| Employment | | | |
| - Part-time | -6.21 | 1.66 | 0.000 |
| - Full-time | -9.09 | 2.68 | 0.001 |
| - Self-employed | 0.50 | 3.71 | 0.89 |
| Foreign | 6.47 | 5.79 | 0.26 |
| Single parent | 12.89 | 9.18 | 0.16 |
| <i>Father</i> | | | |
| Employment | | | |
| - Employed | 10.96 | 3.86 | 0.005 |
| - Self-employed | -0.49 | 3.08 | 0.87 |
| - Employment info missing | 10.29 | 5.47 | 0.06 |
| <i>Household</i> | | | |
| Children, Number | | | |
| - Less than 1 year | 19.09 | 4.07 | 0.000 |
| - 1 to 2 years | 16.82 | 2.19 | 0.000 |
| - 3 to 5 years | 8.83 | 1.46 | 0.000 |
| - 6 to 12 years | 5.48 | 1.13 | 0.000 |
| - 13 to 15 years | 0.07 | 1.71 | 0.97 |
| Dishwasher | -2.76 | 1.59 | 0.08 |
| Income, net of mother's (1,000 Euro) | 0.07 | 0.05 | 0.13 |
| Number of adults | -1.20 | 7.63 | 0.88 |
| | | | |
| N | 1,103 | | |
| Pseudo R ² | 0.03 | | |
| Log likelihood | -4,612.60 | | |

APPENDIX

Prediction of Mother's Employment Status

For each of the nine countries represented in our analysis, we estimated a separate multinomial logit model of mother's employment status. Employment status is operationalized as: whether a mother was not in the labor force, whether she worked part-time (29 hours/week or less), or whether she worked full-time (30 or more hours/week). The explanatory variables for the model include: the age of the youngest child in the household, the number of children under the age of 16 years who live in the household and the number squared, whether the mother's education level is "medium" or "high" (see Table 1 for definitions of "medium" and "high"), the mother's years of work experience and work experience squared, whether the mother is a single parent, whether the mother cohabits, whether the mother's nationality differs from the country in which she resides, whether the mother is restricted in her activities due to illness, injury or mental health, the number of adults who live in the household, yearly household income from work net of mother's earned income, and yearly household income from sources other than employment. The following table presents the multinomial logit estimates for The Netherlands; "not employed" is the omitted category. Results for the other eight countries are available from the authors upon request.

TABLE A1. MULTINOMIAL LOGIT MODEL OF MOTHER'S EMPLOYMENT STATUS

| Variable | Coefficient Estimate | Standard Error | P > z |
|--------------------------------|----------------------|----------------|--------|
| Part-Time Employment | | | |
| <i>Mother</i> | | | |
| Age | 0.86 | 0.15 | 0.406 |
| Age squared | 1.00 | 0.003 | 0.075 |
| Education | | | |
| - Medium | 2.06 | 0.47 | 0.002 |
| - High | 2.55 | 0.85 | 0.005 |
| Foreign | 1.82 | 1.47 | 0.46 |
| Health limitations | 0.88 | 0.20 | 0.41 |
| Marital Status | | | |
| - Single parent | 0.07 | 0.10 | 0.08 |
| - Cohabiting | 1.62 | 3.37 | 0.82 |
| Years worked | 1.17 | 0.04 | 0.000 |
| Years worked squared | 0.99 | 0.001 | 0.000 |
| <i>Household</i> | | | |
| No. Children < 16 yrs. | 1.67 | 0.82 | 0.29 |
| No. Children < 16 yrs. squared | 0.88 | 0.09 | 0.21 |
| Age, youngest child | 1.11 | 0.04 | 0.004 |
| No. Adults | 0.18 | 0.27 | 0.26 |
| Income other than mother's | 0.99 | 0.006 | 0.28 |
| Full-Time Employment | | | |
| <i>Mother</i> | | | |
| Age | 0.79 | 0.20 | 0.35 |
| Age squared | 1.00 | 0.004 | 0.18 |
| Education | | | |
| - Medium | 1.51 | 0.48 | 0.20 |
| - High | 3.85 | 1.60 | 0.001 |
| Foreign | 2.34 | 2.23 | 0.37 |
| Health limitations | 0.69 | 0.23 | 0.28 |
| Marital Status | | | |
| - Single parent | 1.80 | 2.25 | 0.64 |
| - Cohabiting | 7.42 | 16.07 | 0.35 |
| Years worked | 1.24 | 0.07 | 0.000 |
| Years worked squared | 0.99 | 0.002 | 0.000 |
| <i>Household</i> | | | |
| No. Children < 16 yrs. | 0.78 | 0.51 | 0.70 |
| No. Children < 16 yrs. squared | 1.00 | 0.14 | 0.99 |
| Age, youngest child | 1.17 | 0.05 | 0.001 |
| No. Adults | 2.03 | 2.41 | 0.55 |
| Income other than mother's | 0.99 | 0.01 | 0.22 |
| Model Statistics | | | |
| N | 1,105 | | |
| Pseudo R ² | 0.38 | | |
| Log likelihood | -655.50 | | |