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TIME USE DURING THE PARENTAL LEAVE AND THE RETURN TO EMPLOYMENT

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ABSTRACT: This study investigates whether or not time use during a parental leave has an independent explanatory power in the subsequent decision to return to employment. In studies of the exit from maternity leave it has been found that it is the mother's education, age and type of employment contract that most strongly determines whether she returns to employment or not. However, whether the structure of time use – the amount of leisure activities, the intensity of childcare or the preference for housework – has an independent effect, has not been studied before. This study looks whether this is the case by using information on the work histories of those mothers that participated in the Finnish Time Use Study 1999/2000. Although based on a limited sample, only 148 mothers, our results show that the mother's time with her children does not and the amount of active leisure and social activities, do postpone the return to employment. However, the effect was modest at the most. Instead this study confirms the results obtained from earlier studies having concentrated on the mothers' socio-economic background. It seems that these factors (age, education and income level) are the driving force behind the mother's decision to return or not to return to paid employment.

Keywords: Time-use, Female labour supply, Fertility
JEL Classification: J2, C3, D1

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TIIVISTELMÄ: Tutkimuksessa tarkastellaan mitkä ovat ne äitien sosio-ekonomiseen asemaan ja ajankäyttöön liittyvät tekijät, jotka selittävät äitien paluuta työmarkkinoille eri perhevapaan muodoista. Aikaisemmissa äitien paluuta työelämään tarkastelevissa tutkimuksissa paluuta on selitetty pääsääntöisesti naisten sosio-ekonomisilla ominaisuuksilla ja etuusjärjestelmillä. Näissä tutkimuksissa keskeisiksi selittäviksi tekijöiksi ovat osoittautuneet ikä, koulutustaso, aikaisempi työhistoria, perheen tulot ja etuuksien kesto eri järjestelmissä. Näissä aikaisemmissa tutkimuksissa ei kuitenkaan ole tarkasteltu onko näiden paluuta selittävien tekijöiden joukossa ajankäyttöön liittyviä muuttujia. Onko ajankäytön jakautumisessa joitain sellaisia tekijöitä, jotka voivat ennustaa missä vaiheessa äiti palaa takaisin työelämään? Tutkimuksessa käytetty aineisto on Tilastokeskuksen Ajankäyttötutkimus vuodelta 1999/2000, jota on täydennetty Työssäkäyntitilaston tiedoilla. Tutkimuskohteeksi valittiin perheenäidit, joilla on alle kouluikäinen lapsi ja jotka eivät ole ajankäyttötutkimushetkellä työelämässä, mutta mahdollisesti vuosina 2001–2003. Kohdejoukko oli verrattain pieni, vain 148 äitiä. Tutkimuksen tulos on, että eri tukijärjestelmissä eri tekijät selittävät työhön paluuta. Tukijärjestelmät valikoivat siten työhön palaajat eri tekijöiden suhteen. Ajankäyttötekijät selittävät osaltaan työhön paluuta. Lastenhoitoon käytetty aika ja sosiaalisten aktiviteettien määrä vaikuttivat työhön palaamisen todennäköisyyteen. Pääpaino äitien paluussa on kuitenkin muilla kuin ajankäyttöön liittyvillä tekijöillä, kuten iällä ja koulutustasolla.

Asiasanat: Ajankäyttö, Naisten työn tarjonta, perhevapaat
JEL luokat: J2, C3, D1

1 Introduction

The long-term sustainability of the European Social Model is based on balancing productivity growth, high labour participation rates and nativity. In the Lisbon strategy that the European Union adopted in 2000 the increase in the labour participation rates in Europe, especially that of women, is considered as one of the key requirements. An increase in the labour market participation rates for women can be achieved in two ways: by increasing the number of working women and by keeping the interruptions in the careers of women as short as possible. Child birth and the subsequent time used on taking care of the child are the key periods when women are absent from the labour market.

It has become increasingly challenging for women to balance the needs of the child and the demands of today's market work. The problem has become more pronounced with the increase in the educational qualifications of women as well as in the age at which women have their children. Although there is some evidence that European men are contributing more to housework, the time use studies show that women still bare the main burden of housework. (Piekkola and Ruuskanen 2006). Moreover, there is evidence from various studies that both own time and the time spent with other family members are growing in importance[1]. Therefore, the need to combine work and life in a satisfactory way stands out as a key to guaranteeing the labour force participation of mothers.

In Nordic countries the rise in the labour market participation of women occurred earlier than in the rest of Europe and, therefore, the problem of work-life balance has been the focus of Nordic policymakers already for some time. Indeed, the Nordic countries have been pioneers in devising different kinds of parental leave schemes and daycare and homecare arrangements.[2] However, these systems have been built around the idea that when women return to employment, they do it on a full-time basis. For those mothers that value highly their childcare time and leisure time the decision to return to the labour market might be a difficult one.

[1] See Julkunen, Nätti and Anttila (2004)
[2] See, for example, Social Protection in the Nordic Countries 2003.

The key question that this study attempts to address is. Does time use during the parental leave have an independent role in the decision to re-enter working life? We will study this by looking at the subsequent work history of those mothers that participated in the Finnish Time Use Survey 1999/2000. Although the size of the sample is small, it provides interesting insight on the time allocation of mothers and their return to employment. Earlier research on the re-entry of mothers into employment has concentrated on two strands of the literature. The first concerns the length of the period that mothers spend outside the labour force and the determinants of their subsequent return to work. The other, which is only emerging, looks at the differences in time use between mothers that stay at home and those who are employed. However, to our knowledge no study has explored the causal links between time use and the return to employment. In this paper, we propose to join these two lines of the literature and look at time use in relation to the decision to re-enter the labour market.

In studies of the exit from maternity leave it has been found that it is the mother's education, age and type of employment contract that most strongly determines whether she returns to employment or not. However, the structure of time use – the amount of leisure activities, the intensity of childcare or the preference for housework – can also have an independent effect.
The effect of leisure activities on the decision to retire has been studied by Piekkola (2006) and Leijola and Piekkola (2007). They show that the structure of homework and its close relation either to market work or to leisure activities have an impact on the early retirement decision. Huovinen and Piekkola (2002) also find early retired to be active in leisure time. A natural follow-up question then is whether time use also affects the behaviour in other situations such as that of mothers. One important stage, when time use has to change extensively, is when mothers go back from parental leave to employment. Does the time use pattern during the parental leave spell reveal preferences for staying at home or rather for returning to work?

The paper starts by reviewing the earlier literature on the decision of mothers to return to work. The recent literature on the time-allocation of working mothers is reviewed. Because the Finnish parental leave system has some national features, they are explained to the reader. Then data and the econometric method used are discussed. The results are presented with the conclusions of the study.

2 Previous Empirical Studies on the Return to Employment

There is a small but growing empirical literature on the subsequent employment of mothers for a number of European countries.[3] From the point of economic theory the most relevant way to study mothers' return to work would be to analyse life-time fertility and labour supply decisions in a dynamic maximization model. These models show that fertility and labour supply are determined simultaneously in response to a complex set of present and future opportunities and constraints. With these models it is also possible to distinguish between long-term equilibrium values and short-term adjustments. However, empirical validation of these models would call for long-term panel data which is hard to obtain. Therefore, as most of the available data is short-time panel data or cross-section data, most studies have concentrated on the effect of specific variables in a short-term context.

Below the key results from a number of studies are presented under three headings. The first deals with mothers' socio-economic characteristics, the second with the role of benefit systems and the last with labour market opportunities and day care choices.

2.1 Socio-economic characteristics

The following studies show that the most important characteristic is the educational level of the mother. There is a close connection between the mother's education and her probability of returning to employment. The educational qualifications are also a major determinant of the length of parental leave and the age of the mother when children are born. As Del Boca and Pocatello (2006) point out, educational qualifications affect women's wages and wage profiles and also the timing of births. Therefore the strong impact that education has in these estimations might reflect unobservables that are correlated with education.

Using the National Child Development study Macran, Joshi and Dex (1996) studied the return to employment of first birth British mothers from two cohorts born 1948 and 1958. The speed of re-employment was heavily dependent on education: The more educated returned fastest. They also found that older mothers return to employment. They could explain the change in the rate of re-entry by the increase in the older and better educated age-groups.

[3] For comprehensive recent reviews, see Napari (2006) and Valkonen (2006).

Gustafsson et al. (1996) also got a strong educational effect on the mothers' rate of return in Germany and Great Britain, but not in Sweden.

Saurel-Cubizolles et al. (1999) studied whether the mother had returned to work one year after giving birth to a child in France, Italy and Spain. They got results in line with those obtained in other studies: women with a low education had difficulties in re-entering employment. Most of the women in their sample used the maximum leave possibilities.[4]

In Macran et al. (1996) the speed for returning to employment was also dependent on the number of subsequent children. The smaller the total fertility of the woman, the faster she returned to work after a given birth.[5] Moreover, the time in employment after the first birth was about three years before the women were again on maternity leave.

2.2 The benefit system

Rönsen and Sundström (2002) studied how different maternity leave programs affected the return to work after the first and the second birth in Norway, Sweden and Finland. Their data covered the years 1972 to 1992. They got the result that the return rates back to employment were largest for women who were entitled to paid leave. However, in Norway and Finland the return was usually extended to the end of the entitlement period. In Sweden, due to a more flexible program, entry happened also during the benefit period.

Rönsen and Sundström pointed out that the Finnish home care allowance system was found to reduce entry back to employment. They argued that long leave entitlements and child-minding benefits might have a negative consequence for women's earnings potential and further employment. This point was made also by Hämäläinen (2004 and 2005), who discussed the poor labour market history of those women that had stayed on the home care allowance system.

These results are in contrast to those reported by Gutierrez-Domenech (2005) using data on Belgium, Germany, Italy, Spain and Sweden for the years 1973-1993. She obtained the result

[4] Interesting additional information on job satisfaction and whether the pregnancy was wanted or not was collected in the survey conducted in these countries. It showed that women that were not satisfied with their previous work and also those that did not want the child did not return as often to work. The authors concluded that the women with unwanted children might come from backgrounds that were unfavourable to employment.
[5] This could point to the direction noted by Lundberg and Ross (2000), viz. selection bias into motherhood.

that the type and the generosity of maternity leave benefits do not have a significant impact on the evolution of post-birth employment.

2.3 Labour market opportunities and child care facilities

One of the most extensive studies about the role of different factors on the employment after motherhood is Gutierrez-Domenech (2005). She found that the variation in labour force participation rates across European countries results mainly from the amount of part-time and full-time jobs available for women. Saurel-Cubiszolles et al. (1999) got the result that women with less secure jobs have difficulties in entering employment after child birth. Also Gutierrez-Domenech (2005) pointed to the importance of the mother's total time outside the labour force, which was found to lower her subsequent employment probability.

The effect of rationing in childcare facilities on the subsequent employment of mothers has also been discussed in the literature. For example, Chiuri (2000), Wrohlich (2006) and Del Boca and Vuri (2006) show that rationing has a negative effect especially on women with lower educational qualifications and lower income. This finding makes the studies conducted for the Nordic countries more robust, as the extensive supply of childcare facilities implies that the mothers' decisions can be investigated without the distorting effects of rationing. Del Boca and Sauer (2006) combined the prevalence of part-time and full-time jobs and the type of day care to construct a dynamic model of fertility and labour supply choices for Italy, Spain and France. They found that the prevalence of part-time jobs and flexible childcare arrangements play a major role for women's labour force participation in these countries.

In conclusion, these studies show that the most important determinants of the mother's return to employment is her socio-economic characteristics, especially education. Almost as vital are the prevailing labour market conditions, such as part-time versus full-time employment opportunities, and the availability of childcare facilities. It would seem that institutional details affect a great deal the mother's return to work in different welfare regimes.[6] However, differences in the benefit system after a certain threshold seem to explain very little of the decision to return to employment in different European countries.

[6] For a commonly used typology, see Esping-Andersen (1990).

3 Time Use During Maternity Leave

Following the wave of new time use surveys, especially the American Time Use Survey introduced in 2003, there has been a number of studies that have looked at the composition of time use in families with small children. The main research interest has been on the differences in the time allocation of those mothers that are in employment and those mothers that stay at home. Naturally the focus of interest has been on the time allocated to childcare and how this changes when a mother gets employed.

In time use surveys there are some differences in how the time with children is recorded. The Europe Guidelines on Harmonised Time Use Surveys give a coding scheme that is used in most European countries. The American Time Use Survey, however, uses a different coding scheme.

Table 1 shows the different categories of childcare that the Guidelines on Harmonised European Time Use Surveys recommend. The Finnish Time Use Survey uses these categories with two exceptions. Going out with a child and talking with a child are independent categories in the Finnish Time Use Survey.

Table 1 Childcare categories in the Harmonised European Time Use Survey and the additional categories in the Finnish Time Use Survey

Finnish Time Use Survey	Harmonised European Time Use Survey
381 Physical care and supervision	381 Physical care and supervision
382 Teaching the child	382 Teaching the child
383 Reading and playing with a child	383 Reading, playing and talking with a child
384 Accompanying a child	384 Accompanying a child
385 Going out with a child	*Included in 381*
386 Talking with a child	*Included in 383*
389 Other specified childcare	389 Other specified childcare
380 Unspecified childcare	380 Unspecified childcare
938 Transporting a child	938 Transporting a child

Source: Guidelines on Harmonised European Time Use Surveys (2000) and Finnish Time Use Survey 1999/2000

In the time use literature, a distinction is made between primary care and secondary care. Primary care is taken to include time use where an adult interacts actively with a child. Secondary care is usually defined to include passive time use with a child. No agreement has yet been reached on how to classify different time use categories into these two groups.The calculation of the time used in childcare is further complicated by the fact that a childcare activity can be recorded either as a primary or a secondary activity within a given time period. Therefore a decision has to be made whether or not to include primary and secondary care that has been done as a secondary activity when calculating total childcare time.

One problem with the categories recommended in the European Guidelines for Harmonised Time Use Surveys is that some of them involve both primary and secondary care activities. In the guidelines there are examples of which activities to include in which categories. For example, category 381 (physical care and supervision) should include activities as varied as changing diapers to watching my children playing on the playground. These categories become important when adjustments in time use resulting from re-employment are investigated. The research on the time allocation of mothers has looked on how much different types of childcare time is reduced. Especially there has been an interest in the reduction of primary care time.

Bianchi, Riley and Milkie (2005) compared the time allocation of employed and unemployed mothers using two private time use studies conducted in the United States in 1975 and 2000. They tried to find out which activities were displaced or set aside when mothers entered into employment. Bianchi et al. found that it is mostly housework that is reduced, when mother become employed. Primary childcare also declines in comparison with unemployed mothers as did sleeping and free-time. Craig (2005) studied the time use strategies of unemployed and employed mothers by use of the Australian Time Use Survey from 1997. Also her results indicated that it is mostly housework and to a smaller degree leisure and sleep that is given up when parents are employed.

Another factor that Craig was able to study was the re-scheduling of activities. Some activities are transferred from weekdays to weekends while other are advanced or deferred. The episodic data used showed that in families where parents are in paid employment childcare activities were scheduled in early mornings and in late evenings. The families went to bed later than families with non-working mothers. Ichino and de Galdeano (2005) studied the differences in time use between employed and non-employed mothers in Italy, Germany and

Sweden. The data was the relevant time use surveys from each country. They found that the smallest reduction in the amount mothers spend with their children when getting employed occurred in Sweden. They attributed this to formal day care opportunities connected with part-time employment possibilities. Contrary to the results obtained by Graig (2005) they found no evidence that childcare time was transferred to weekends.

Ichino and de Galdeano (2005) also studied how primary care and secondary care differed between employed and non-employed mothers. They defined primary care to include all activities that enhanced the child's educational and cultural development. In Germany and Italy primary care diminished the most.

These studies also show that the same socio-economic and institutional factors that affect the mother's return to employment also affect the time spent on childcare. For example, the educational level of the mother plays an important role for the amount of reduction in time with children. The lower the educational level, the more the time spent with children is reduced when the mother becomes employed. (Ichino and de Galdeano, 2005). This effect of education on childcare was present also in Great Britain and the United States (Kalenkoski, Ribar and Stratton, 2005).

The results by Ichino and de Galdeano (2005) further show that also institutional features play a role in the reduction in childcare. The type of day care facilities affects the number of hours mothers spend with their children. Also the amount of part-time or full-time jobs affects the extent of the reduction. In countries where only full-time work was prevalent, there was a large reduction in the amount mothers spent with their children. The same effect was found by Kalenkoski, Ribar and Stratton (2005) who used the American Time Use Survey from 2003 and United Kingdom's Time Use Survey from 2000 to examine differences in parental childcare in connection to different employment status of both mothers and fathers. Mothers with part-time work opportunities reduced the time spent with their children the least.

In conclusion, the re-employment of mothers reduces the time spent with children. However, it seems that mothers try to reduce other activities, such as housework and sleeping, more than the time with their children. The extent of the reduction in time with children depends on the educational level of the mother and the type of job opportunities available. The more educated the mother is and the more part-time jobs there are available, the less the childcare time is reduced.

4 The Finnish Parental Leave System

The Finnish system shares many features, like a long maternity leave period and high net replacement rates, with the other Nordic countries. [7] The parental leave period is divided into two components. The first part is the maternity leave, which lasts 105 working days and is solely reserved for the mother. During this period mothers receive a maternity allowance. When maternity leave ends, a parental leave period starts. It lasts 158 weekdays. Entitlement to a parental allowance begins immediately after the payment of the maternity allowance ends. Although it is possible also for a father to take parental leave in a majority of cases it is the mother who takes the parental leave.[8]

Parenthood allowances are calculated on the basis of the recipient's most recent earnings using three threshold levels.[9] For earnings between 0 to 25.000 euros it is 70 percent of that income. between 25.001 and 38.000 it is 40 percent of that income and for earnings exceeding 38.001 euros it is 24 percent. If a person has not been employed, whether having been a student, unemployed or on earlier parental leave, he/she is entitled to a minimum amount set yearly by the authorities. In 2005 this minimum amount was 15.20 euros per day.

In some sectoral collective agreements it has been stipulated that a certain part of the maternity leave is normal paid holiday for the employee. Employers who give their employees this holiday pay or a special holiday bonus while the employees are receiving a maternity, paternity or parental allowance can claim compensation from the state. Because of this, Hämäläinen (2005) notes that it is almost impossible to calculate from available data the effective net replacement rates for the different recipients. She reports an estimate of around 70 percent of previous earnings.

After the parental leave period it is possible for either parent to stay at home until the child is three years of age. This is called the child home care allowance system and the idea is to offer

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[7] The parental leave systems seem to be in a constant state of readjustment. Therefore, the observed changes in fertility and labour market participation may be caused more by short-term adjustments in the households' optimizing behaviour than by permanent changes.

[8] In 2003 an additional leave period of two weeks for fathers was added to the end of the parental leave period. The extension was made conditional on the father taking the last two weeks of the parental leave instead of the mother. So the total parental leave, with this extension, is 170 weekdays, but only if the father takes the last 24 days. The idea behind this reform is to encourage fathers to spend more time with the infant.

[9] From October 1, 2005, the parenthood allowance can also be calculated on the basis of the earnings used for determining a previous allowance, provided that the child for whom that earlier allowance was paid is not yet three years old as of the due date of the next child.

parents of young child an opportunity to take care of their children instead of putting them into day care centres.
The allowance paid in the home care system is not based on previous earnings. There is a basic allowance of around 300 euros per month. This minimum is raised in case of siblings or a low income level. Some municipalities also pay extra for children in the home care system as a compensation for not using public day care facilities.

After the home care system, there are additional possibilities to combine working and family life. For example, the parent has a statutory right to work reduced hours until the child is eight years of age. In conclusion, as Datta Gupta, Smith and Verner (2006) point out in their extensive review of the Nordic model, the Finnish system stands in the lower end if compared by the average level of benefits to other Nordic countries but in the higher end if the issue of comparison is the length of the benefit period.

5 Data and Descriptive Statistics

The dataset used in this study is the Finnish Time Use Survey (FTUS) 1999/2000 collected by Statistics Finland. The data were collected according to the Eurostat guidelines for harmonized European time use surveys. This effort resulted in time use data for 10,561 days. The sampling design was a two-phase, single-cluster sampling, where households were clusters and individuals were the elementary units. Household members were first interviewed for background information and then asked to keep time use diaries for two days, totalling hence to two times 24 hours. Each individual was asked to keep a diary one weekday and one weekend-day, which were selected randomly. Within households, the same days were assigned to each member.

Each respondent recorded his/her primary and secondary activity in ten minute intervals for the two diary dates. These activities were coded into 185 different time use categories. The resulting basic micro data file included 144 adjacent 10 minute spells of activities for each person from 4:00 am to 3:50 am for the two recording days. For this study, a sub-sample of women aged 18 to 45 was selected. They had to be married or cohabiting and have children under six years of age. Six is the age when a child has a statutory right to go to a preparatory class in Finland. This resulted in a sample of 148 women, for which there are observations for 296 days.

Single mothers were not included in the sample because there is evidence (for example Jenkins and Symons (2001) and Kalenkoski, Ribar and Stratton (2006b)) that the time use of single mothers differs markedly from that of mothers living with other adults. In particular, there is much less possibilities for flexible time use when one is a single mother. Time use data has a great number of zero observations. This means that in the case of rarely occurring activities, most of them are not recorded to a randomly allocated diary date of the person. This makes it difficult to study time use from very detailed time use categories. One solution is to construct a synthetic week for each person based on the two diary dates. This procedure was adopted by multiplying the weekday observation by five and the weekend-day observation by two. The assumption behind this procedure is that the structure of time use stays the same during each day.[10]

In table 2 some descriptive statistics of the mothers selected into the sample are presented. We see that the average age of the mother is 31 with a variation from 19 years to 44 years. The mothers in the sample have on average two children. The mothers are relatively well educated: A third has an academic degree and almost one-half has a secondary degree. The household income was in 1999/2000 on average 27,000 euros.

Table 2 Descriptive Statistics of the Sample

Average age of the mother	30.5
Average number of children	1.95
Academic degree	33 %
Secondary degree	46 %
Primary degree	21 %
Household yearly income (euros)	27.019
Active leisure (hours in a week)	4
Share of childcare	34 %
Share of social leisure	18 %
Share of housework	66 %
Long-term active leisure	37 %
Lives in town	56 %
Number of observations	148

[10] For extensive discussion about the problems associated with these zero observations and with synthetic weeks, see Ruuskanen (2004).

If we look at the share of different time use activities we see that housework takes on average two-thirds of the time of mothers and half of this is childcare time. The mothers have four hours of active leisure during the week and the share of social activities is 18 percent of their time use. A third has participated in some form of long-term active leisure. Although these mothers are at home, 13 percent have indicated that somebody else, such as a relative or a nanny, is helping to take care of the child. This time use data was merged with information on the work histories of these mothers. There was information on whether or not the mothers had worked in the previous three years before participating in the time use survey. It also contained information on whether or not the mothers had returned to employment three years after the time use survey. This additional data was obtained from the Finnish Employment Statistics.

The employment histories obtained from the Finnish Employment Statistics show that very few of the sample mothers had been employed before or after participating in the time use survey. In table 3 we report the number of women that had been employed in a given year previous to participating or after having participated in the time use survey.

Table 3 Employment History of the Mothers sampled from the Finnish Time Use Survey

Year	**1996**	**1997**	**1998**	**2000**	**2001**	**2002**
Number	18	16	15	18	14	17

(n=148)

This means that the employment rate within this particular group had fluctuated between 9 and 12 percent from 1996 to 2002. This shows that the investigated group has had a very peculiar labour market history. First, it might indicate that women with very poor employment prospects have children. This could account for the low employment level between 1996 and 1998 of these future mothers. Another explanation is that these mothers have had their children in close succession and, therefore, they stay out of the labour force for a long time. This could explain the low level of employment during the years 2000 to 2002.

We divide our sample into four different groups based on the age of the youngest child and the mothers' post-survey employment history. In the first group, the youngest child was under one year of age during the diary day and the mother returned to employment between the late 2000 and the late 2002. These mothers had been on maternity leave, had received a maternity

allowance and returned to work. There are 12 cases fulfilling these conditions, which corresponds to eight percent of all observations. The second group had their youngest child between one and three years of age and the mothers had returned to employment between the late 2000 and the late 2002. These mothers had been on the home care allowance system for children up to three years of age. There are 21 cases in the sample, which represent 14 percent of the observations.

The third group had the youngest child between four and six years during the diary date and the mothers had returned to employment between the late 2000 and the late 2002. These mothers had been home even after they became non-eligible for the home care allowance system but had for some reason returned to paid employment. There are only six such cases and thus only four percent of the observations fall into this category.

The last one is the reference group of mothers. They had not returned to employment by December 2000 and had children less than six years of age. There are 109 such cases.[11] In table 4 the breakdown of re-employment years is presented for the three groups of re-entering mothers. Their re-employment patterns are further contrasted against the total number of mothers in the data with differently-aged children. As shown in the last column of the table, approximately one-fourth of the mothers within each child age group end up employed.

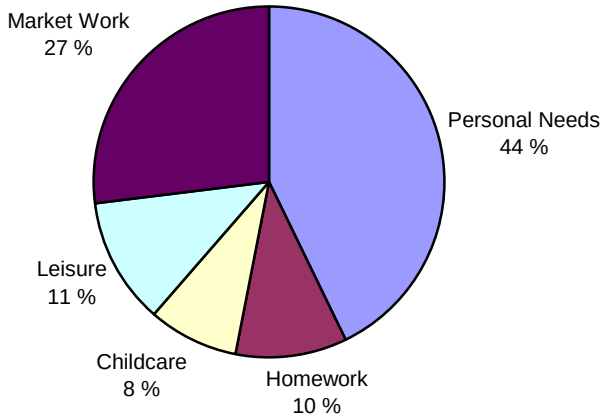
Table 4 Return to Employment by the Age of the Youngest Child

Employment year **Child's age**	**2000**	**2001**	**2002**	**Re-employed mothers in this subgroup**	**All mothers in this subgroup**	**Percent employed**
Child's age under 1 year	5	3	4	12	46	26 %
Child's age between 1 and 3	9	7	5	22	77	28 %
Child 's age between 3 and 6	4	2	0	6	25	25 %

(n=148)

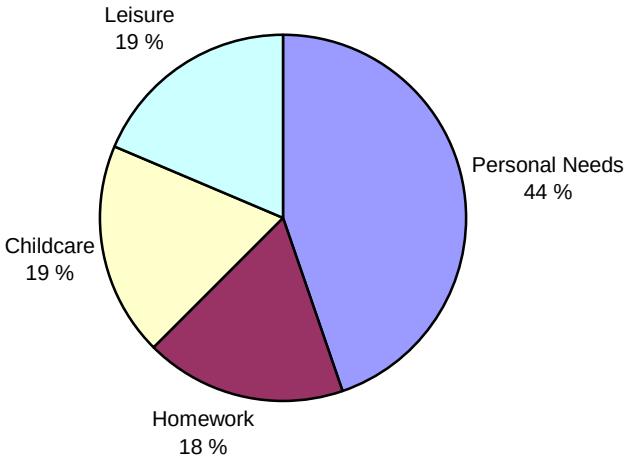
[11] Usually the reference group in the studies explaining the return to employment is mothers that have already returned to work. When studying time use data this is not a relevant option. The time use of those in employment differs markedly from the time use of those still at home. As the aim of the paper is to study the differences between those that return to employment and those that do not while they are still taking care of their children, the reference group has to be the chosen one.

Chart 1 Time allocation of employed mothers during the week (n=117)



Source: Finnish Time Use Survey 1999/2000

Chart 2 Time allocation of mothers at home during the week (n=148)



Source: Finnish Time Use Survey 1999/2000

In order to study possible adjustments in time use following upon re-employment we examine the time allocation of those mothers that are at home and of those in employment. In the Finnish Time Use Study there ia a total of 117 working mothers with children under six years of age. This compares with 148 mothers who were home and had children of the same age.

The time allocation of employed mothers is presented in chart 1 and the time allocation of mothers staying at home in chart 2. First, market work takes 27 percent of the total time allocation of the employed mothers. This translates into about 31 hours of weekly work. The figure includes both part-time and full-time working mothers. When a mother becomes employed, the time available for other activities is naturally reduced. However, the amount of adjustment differs across time use categories.

Whether working or not, personal needs like sleeping, grooming and eating, take 44 percent of all available time. It is surprising that the total time allocated to personal needs do not change when mothers return to employment. In the studies reviewed above (for example Bianchi et al. (2005) and Craig (2005)) the personal needs time is reduced. Niemi and Pääkkönen (2002) note that in Finland there is a reduction in personal needs also when an unemployed person becomes employed and an increase in the time used for personal needs when one retires. One would expect to see some reduction in the personal needs time for re-entering mothers, but this is not the case.

When a mother is at home taking care of her child, the rest of the available time is divided evenly between childcare (19 percent), homework (18 percent) and leisure (19 percent). These time use categories consume each about 20 hours during the week.
When the mother returns to employment childcare drops from 19 percent to 8 percent in the total time allocation. The reduction is over two and half hours per day. Those mothers that are not employed devote a total of 22 hours to childcare during the week, but working mothers only 9,5 hours. The reduction in the total time with the child when the mother returns to employment is over 57 percent on average. A reduction of this size in aggregate childcare time is surprising as it is less in other countries. In the reviewed literature one of the main results was that the time with children did not drop as much as the time used in other activities. (Craig 2005; Kalenkoski, Ribar and Stratton 2005) The explanation was that mothers try to minimize the loss of time with their children.[12]

One possible explanation for the sizable reduction obtained for Finnish mothers is that most of them use municipal day care services when employed. The child is in the municipal day

[12] In a recent paper, Kimmel and Connely (2006) argue that childcare time should not be categorized at all into housework or leisure. They argue that childcare time has begun in the United States to react more like market work to wages and other monetary incentives. They explain this by the fact that mothers with higher educational qualifications increase their time with children disproportionally.

care centre usually for the whole working day. There is an option to keep the child in day care for only half a day, but the parents still have to pay 80 percent of the full day costs. Therefore, most children are in day care for the whole day. This explanation is in accordance with the results by Ichino and Galdeano (2005) who found that there was a large reduction in the amount that mothers spent with their children in the countries where mainly full-time work was available. Instead of aggregate childcare time the interest in the time use literature has rather been on how the primary childcare time changes when the mother becomes employed. In order to study this a primary care time is defined by including the following activities: talking to the child, reading and playing with the child and teaching the child.[13]

Again we compare the two groups for which we have information in the Finnish Time Use Survey: mothers who have children under 6 years of age and are either in employment or not. Primary childcare takes about 4 hours 20 minutes per week for mothers that are not working.[14] For working mothers the primary childcare time is 2 hours 30 minutes. The difference is 45 percent. In percentage terms the reduction in aggregate childcare time is stronger than that in primary childcare time. However, there is still a sizable reduction also in this more important time component.

Other housework drops from 18 percent to 10 percent of the total time allocation, which is a daily reduction of one hour and 48 minutes. The time for leisure drops to 11 percent. This means a one and half hours daily reduction in leisure. As leisure can be either active or passive it is interesting see whether active leisure is considerably reduced. In the literature the structure of the leisure time that the mother is able to spend after having returned to work is seen as an indication of the double burden that working mothers face (for example Bittman and Wajcman (2004)).

Active leisure is defined, following Huovinen and Piekkola (2002), to include all categories that request an active input from the person undertaking it. During a week those mothers that are not in employment spend on average 50 minutes per day in active leisure. When employed the time for active leisure drops to 30 minutes per day. Active leisure that is used to rebalance the daily chords, includes many rarely occurring activities, which are not easily captured in time use diaries. In the Finnish Time Use Survey additional questions were posed to the participants in

[13] These are activities coded as 382, 383 and 386 in the Finnish Time Use Survey.
[14] This time includes only childcare as the principal type of time use. If the time used with children has been done as a secondary activity, then it has not been included in this calculation.

order to account for long-term activities. The respondents were asked whether they had participated in a given group of activities during the previous 12 months. The activities in question represented four aggregate categories: cultural activities, sports activities, organizational activities and volunteer work activities. Overall there were 153 questions on participation in different activities, including 15 different voluntary organizational types, 20 volunteer work situations, 19 cultural activities and 12 different types of sports.[15]

In order to assess longer-term consequences of the decision to return to employment from parental leave for the active leisure of mothers the following strategy was used. If the mother had undertaken a single activity within an aggregate category she was considered to be active in that particular area. Acordingly the maximum score attainable was four. Mothers that were working had a long-term active leisure score of 2,7 whereas mothers that were at home had a score of 2,9. The reduction in long-term active leisure does not seem to be very large.

In conclusion, the mothers in this data have not been very active in the labour market before or after participating in the time use survey. Out of 148 women only 38 returned to employment in the subsequent 3-year period. By comparing mothers that are in employment with mothers that are not it is possible to see which time use categories are affected. Childcare time diminishes the most. Also the amount of housework is reduced. However, the time spent on personal needs is not reduced at all. Active leisure time also declines, but there seems to be very little effect on long-term active leisure.

6 Empirical estimation

We use a multinomial logit model to estimate the probabilities to return to employment from different benefit regimes. Multinomial logit has become a standard method for estimating choices between unordered alternatives (see for example Cameron and Trivadi (2005) and Wooldridge (2002)). Each choice has the probability:

$$P\left(y=j\middle|\mathbf{x}\right)=\frac{\exp\left(\mathbf{x}\beta_j\right)}{1+\sum_{h=1}^{J}\exp\left(\mathbf{x}\beta_h\right)},\quad j=1,...,J,$$

[15] A fuller description of this information can be found in Ruuskanen (2004).

where *j* is the choice alternative and **x** is a set of conditioning variables. The resulting log-likelihood function has been shown to be globally concave, which makes maximum likelihood a convenient way of finding the solution. The interpretation of the resulting partial effects is difficult to characterize but, for example, the log-odds ratios have been shown to be linear in *x*. These log-odds ratios have an interpretation of describing the effect of the explanatory variable on the dependent variable in comparison to the base situation. If, for example, when explaining the return to paid work from maternity leave academic education has an odds ratio of three, it means that those with an academic education are three times more likely to return to paid work than those belonging to the reference group.

Multinomial logit has one shortcoming in the context of this study. One has to assume that all choice variables are independent of each other. This assumption is called independence of irrelevant alternatives. In our context it means that the individual's probability to return to work from maternity leave would not change even if the option to stay in a home care benefit system was eliminated from the choice set. In our case the validity of this assumption is highly questionable.

We use the following explanatory variables in our estimation: age, educational level, previous labour market status, total household income, number of children and residential area. We expect the age of the mother to increase the probability that she returns to employment. A higher educational level is expected to have a similar positive effect as is also previous labour market attachment and living in a metropolitan area. A higher household income and a larger number of children are expected to lower the mother's re-employment probability.

The time use related independent variables in the estimation are the following: minutes of active leisure, share of childcare in total time use, having help in childcare, share of social activities during leisure, and long-term active time use. We expect all these, apart from the use of outside care, to have a negative impact on the probability to return to employment.

7 Results

Our estimation results show that the mothers' decision to return to employment from different benefit regimes is driven by different socio-economic and time use factors. The estimation results are presented in table 5.

Table 5 Multinomial Logit Estimation Results

	Coeff.	Std. Err.	P>|z|
Return from maternity leave			
Academic degree (**)	3,167	1,273	0,013
Vocational degree (**)	2,677	1,283	0,037
Age	0,892	1,601	0,578
Age squared	-0,160	0,278	0,564
Household yearly income (***)	-3,489	0,985	0,000
Worked before childbirth (**)	2,690	1,188	0,024
Number of children	0,316	0,378	0,403
Share of active leisure (***)	-0,006	0,002	0,000
Childcare time (***)	6,458	2,354	0,006
Share of social leisure	1,034	1,334	0,438
Every day active	-0,027	0,325	0,934
Share of housework	-1,554	4,399	0,724
Having help in childcare	0,387	1,117	0,729
Lives in a town	-0,153	0,697	0,827
Return from home care system with children aged 1 to 2 years (??)			
Academic degree	0,358	0,830	0,667
Vocational degree	0,376	0,792	0,635
Age	0,131	0,602	0,827
Age squared	-0,028	0,097	0,776
Household yearly income (**)	-1,061	0,485	0,029
Worked before childbirth	-0,936	1,577	0,553
Number of children	0,504	0,428	0,239
Share of active leisure	-0,001	0,001	0,647
Childcare time	-0,376	2,269	0,868
Share of social leisure	0,276	1,237	0,823
Every day active	-0,219	0,186	0,238
Share of housework	2,383	2,495	0,340
Having help in childcare	-0,305	0,827	0,712
Lives in a town	-0,858	0,572	0,134
Return from home with children between aged 3 to 6 years			
Academic degree	-4,269	2,710	0,115
Vocational degree	-1,523	2,136	0,476
Age	5,130	3,117	0,100
Age squared	-0,720	0,485	0,137
Household yearly income (**)	-4,117	1,978	0,037
Worked before childbirth	0,478	1,659	0,773
Number of children	-2,011	1,241	0,105
Share of active leisure (**)	-0,003	0,002	0,033
Childcare time	-5,612	3,539	0,113
Share of social leisure (**)	-15,537	6,731	0,021
Every day active	-0,377	0,392	0,337
Share of housework (**)	-10,275	4,620	0,026
Having help in childcare (**)	5,158	2,003	0,010
Lives in a town	-0,890	1,620	0,583

Number of obs	148
Wald chi squared	92,07
Prob > chi squared	0
Pseudo R2	0,3297
Log pseudo likelihood	-84,6577

(*) = significant at 10 %, (**) = significant at 5 %, (***) = significant at 1 %

If we first look at those mothers that have been on maternity leave, we see a number of factors explaining re-employment. The educational level, both academic and secondary education, has the strongest impact. This is in line with other empirical studies, such as Macran et al. (1996) and Gustafsson et al. (1996), which show that the mother's educational level increases her probability to return to employment. It is possible to calculate relative risk ratios based on the estimated coefficients. These risk ratios, which are shown in appendix 2, reveal that mothers with an academic education are as much as 24 times more likely to return to employment than mothers with a primary education only. Even in the case of mothers with a secondary education the effect is still 15 times larger.

The large impact of education on the re-entry decision is driven by a number of factors. Educational variables capture a lot of unobservable variation in the characteristics of the investigated women. For example, in the European Community Household Panel (ECHP) the educational variables turn out to proxy for such things as earnings power, good health and satisfaction in work. Moreover, Ruuskanen (2004) shows that education affects all kinds of time use and especially leisure. In order to investigate how important the educational variables are in connection with the time use categories in explaining the return to employment, a multinomial logit estimation was done also with the educational variables excluded from the model. The results are presented in appendix 3. As can be seen from the estimation results, the exclusion of the educational variables did not affect the significance of the time use variables, implying that. they have independent explanatory power.

Also previous employment increases the probability of returning to work, which is also confirmed in previous studies like Rönsen and Sundström (2002). If the woman had been working before going on maternity leave, i.e. during the period late 1998 to late 1999, she has a 15 times higher probability to return to employment. One has to remember, however, that only ten percent of the mothers had been working before the time use survey period. Previous employment interacts with the educational level. This is shown by the fact that the lack of

market work is concentrated among the women with low educational qualifications. In our sample all women with only a primary education had no recent work experience before going on maternity leave. This poor employment history of mothers with lower educational qualifications is also pointed out in the case of Finland by Hämäläinen (2005).

Higher household income decreases the probability of return. This can mean that households that can afford to have the mother staying at home longer with the children also choose to do so. Doubling the yearly income of the household lowers the re-entry probability to one twentieth. A similar effect has been found in Kalenkoski, Ribar and Stratton (2006a). When it comes to time use two variables turn out to be significant. The amount of active leisure of the mother decreases the probability of returning to employment, but the effect is negligible. The share of childcare time increases the re-entry probability. There are two possible explanations for this. If most of the mothers that return to work do so shortly after the maternity leave, when the children are young and still need a lot of childcare, then the greater share of childcare time correlates with the return to employment. A second possibility is that mothers who know that they will return to work devote more time to childcare as their ability to provide it diminishes after re-employment. There is also a third possibility discussed in Kimmel and Connely (2006) and del Boca and Locatelli (2006), viz. that the more educated women return to work fastest and simultaneously spend most time with their children. This could show up as a positive correlation between childcare time and return to employment.

When turning to those mothers that have returned to paid employment from the home care allowance system only one variable is significant: total household income. Once again, the higher the income the less probable the mother is to return to employment. It seems that this is in line with the observations made by Rönsen and Sundström (2002) and Hämäläinen (2005), who point out that the home care system is extensively used by women with a low income and a lower educational attainment level. They show, moreover, that these women tend to stay in the system for the whole two-year period. Last we turn to those mothers that have stayed at home after the benefit period has ended but have then returned to work. This means that they have been out of employment for a minimum of three years and have found a job after that. Once again, the higher the yearly income of the household, the less probable the mother is to return to employment.

The time used in active leisure and the share of home work have a negative impact on the probability of re-employment as has the share of social activities in leisure time. In all these cases it was very unlikely that the mother returned to employment. A similar result is obtained for home work by Piekkola (2006) when he studied the link between time use and the decision to retire in Finland. However, if the mother gets help from somebody else in childcare, her probability to return to employment is much higher.

Would these effects manifest themselves if one examined these mothers as a single group? In order to test for this, a probit estimation was done. These results are presented in appendix 4. All mothers that had returned to employment were contrasted against those who stayed at home. Only two variables turned out to be significant in explaining the re-employment of mothers. The first was the total household income, which in the case of mothers being on parental leave would correlate with the husband's income. The higher the household income, the less likely the mother was to return to work. The second significant variable was the mother's earlier work history. If the mother had worked before maternity leave it increased her likelihood to return to work.

One problem with the reported results is that they are based on a very small sample. Therefore individual-specific factors of a given observation can distort the results. Notwithstanding this, two general conclusions may be drawn. The first is that with respect to the socio-economic characteristics of the mother the results are in accordance with those obtained in previous empirical studies. Higher educational qualifications and previous work experience increase the likelihood to return while a higher household income lowers it. However, it turns out that a higher education looses significance in explaining the return to work after extending the home stay beyond the maternity leave period. The second conclusion is that some time use categories have a clear-cut impact on the decision to return to employment. This impact is limited but the pattern of time use and its explanatory power warrant, nonetheless, further investigation.

8 Conclusions

This study represents a first attempt to use time use data from a parental leave period to explain mothers' subsequent decision to return to employment. In the empirical estimations

we used the previous and subsequent employment histories of the mothers that had participated in the Finnish Time Use Survey 1999/2000. Hence the data offers a snapshot on mothers' time allocation while they are taking care of their children and their future work histories. The primary question was whether the observed differences in time allocation during and after maternity leave help to explain which mothers return to work and which do not.

Some time use activities do, indeed, have an explanatory power in this context. Especially the time used for childcare and the time used for social activities affect the probability to return to employment. However, the effect was modest at the most. Instead this study confirms the results obtained from earlier studies having concentrated on the mothers' socio-economic background. It seems that these factors (age, education and income level) are the driving force behind the mother's decision to return or not to return to paid employment.

It is evident that the extended benefit systems in use in Finland (until the child is 3 years old) explain why only 25 percent of small children up to 3 years are outside home. The selection into different benefit systems, as the child ages, also affects the rate of entry back to employment. If these mothers were studied as a single group, most of the variation due to the different benefit systems would be lost. Our data provides some evidence that the longer a mother is outside the labour force, the more difficult is her re-entry. It is interesting to note that most mothers in the sample have not found employment in three years after participating in the Time Use Survey. This points to a clear risk of permanent displacement from the labour market for these mothers and this may hold for higher educated women as well.

There has been critical discussion on the effects of the Nordic welfare system on the satisfaction of women and children. The research of Datta Gupta, Smith and Verner (2006) points in the direction that policies that are mainly targeted at giving mothers long maternity leaves can have detrimental effects in the long run. This negative effect not only concentrates to women with lower educational qualifications. Also in case of more educated women the loss of human capital can lead to reduced re-entry possibilities. Therefore, a way to keep women attached to the labour market should be found.

The Finnish welfare system has been built around full-time employment of women. Therefore, when mothers re-enter employment the time use adjustments are large. In other

European countries there are better possibilities to work part-time. If this option could be improved also in Finland it would decrease the time bind of mothers and make it easer for them to return to work.

Recently some evidence on the benefits of part-time work has been published. Booth and van Ours (2005) find that part-time working women show more satisfaction in their life than full-time working women. In his study of part-time work in the Nordic countries Nätti (1995) also argues that part-time work should be seen more as a bridge than a trap in labour markets. However, recent studies for Great Britain (Manning and Petrongolo, 2006) confirm that there is a wage penalty for part-time working mothers. This penalty should be contrasted against the benefits of a good work and family life balance, though.

An undeniable shortcoming of this study is the small number of relevant observations in the Finnish Time Use Survey. Therefore the results should be interpreted with some caution. However, they unravel a number of important questions that deserve further investigation.

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Appendix 1 Classification guidelines for childcare in Guidelines on Harmonised European Time Use Surveys

380 Unspecified childcare

Example: Helped the children

381 Physical care and supervision

Definition: Feeding, dressing, washing and preparing children for bed. Supervision outdoors and indoors.

Example: Brest-feeding my child

Changed diapers

Taking care of the sick child

Watching my child's physical training

382 Teaching the child

Definition: Help with homework, guiding in doing things

Example: Checked homework

383 Reading, playing and talking with child

Examples: Entertained the children

Playing games with children

Reading a story for children

384 Accompanying a child

Definition: Accompanying child to a doctor

Waitng at sports center, music lesson

Examples: Attending end of term celebration at school

Visiting babysitter

389 Other specified childcare

Example: Listened to my daughter playing piano at home

938 Transporting a child

Example: Taking own children to school, practice etc.

Source: Eurostat (2000)

Appendix 2 Relative Risk Ratios of the Variables from the Multinomial Logit Estimation

	Return from maternity leave	***Return from homecare system with children between 1 and 2 year of age***	***Return from home with children between 3 to 6 years of age***
Academic degree	23,743	1,430	0,014
Vocational degree	14,545	1,457	0,218
Age	2,439	1,140	169,015
Age squared	0,852	0,973	0,487
Household yearly income	0,031	0,346	0,016
Worked before childbirth	14,737	0,392	1,613
Number of children	1,371	1,655	0,134
Share of active leisure	0,994	0,999	0,997
Childcare time	637,494	0,687	0,004
Share of social leisure	2,812	1,318	0,000
Every day active	0,973	0,803	0,686
Share of housework	0,211	10,833	0,000
Having help in childcare	1,473	0,737	173,740
Lives in a town	0,858	0,424	0,014

Appendix 3 Estimation results without educational variables

Return from maternity leave	Coeff	Std.Error	P>[z]
Age	0,983	1,114	0,378
Age squared	-0,171	0,191	0,371
Household yearly income	-2,078	0,567	0,000
Worked before childbirth	2,512	1,178	0,033
Number of children	0,246	0,391	0,528
Share of active leisure	-0,004	0,001	0,007
Childcare time	6,099	2,005	0,002
Share of social leisure	1,420	1,541	0,357
Every day active	-0,106	0,236	0,653
Share of housework	-1,180	4,053	0,771
Having help in childcare	0,314	0,965	0,745
Lives in a town	-0,013	0,689	0,985
Return from homecare system with children between 1 and 2			
Age	0,220	0,584	0,707
Age squared	-0,041	0,095	0,668
Household yearly income	-0,968	0,504	0,055
Worked before childbirth	-0,830	1,521	0,585
Number of children	0,500	0,428	0,243
Share of active leisure	-0,001	0,001	0,702
Childcare time	-0,306	2,190	0,889
Share of social leisure	0,235	1,275	0,854
Every day active	-0,212	0,178	0,234
Share of housework	2,406	2,491	0,334
Having help in childcare	-0,284	0,825	0,731
Lives in a town	-0,872	0,570	0,126
Return from home with children between 3 to 6			
Age	3,526	1,873	0,060
Age squared	-0,502	0,314	0,109
Household yearly income	-3,981	1,191	0,001
Worked before childbirth	0,108	1,327	0,935
Number of children	-1,422	0,940	0,130
Share of active leisure	-0,004	0,003	0,126
Childcare time	-7,627	3,356	0,023
Share of social leisure	-9,911	2,845	0,000
Every day active	-0,334	0,607	0,583
Share of housework	-5,039	3,212	0,117
Having help in childcare	3,090	1,204	0,010
Lives in a town	0,003	1,808	0,998
Number of obs	148		
Wald chi squared	127,37		
Prob > chi squared	0		
Pseudo R2	0,297		
Log pseudo likelihood	-88,781982		

Appendix 4 Probit estimation results

Variable	Coefficient	St. Err	P>|z|
Academic degree	0,340	0,416	0,414
Vocational degree	0,436	0,370	0,238
Age	0,195	0,244	0,424
Age squared	-0,031	0,039	0,432
Household yearly income	-0,828	0,230	0,000
Worked before childbirth	0,741	0,393	0,059
Number of children	0,135	0,142	0,342
Share of active leisure	-0,001	0,001	0,224
Childcare time	0,230	0,866	0,791
Share of social leisure	-0,094	0,554	0,865
Every day active	-0,061	0,075	0,418
Share of housework	0,059	0,970	0,951
Having help in childcare	0,080	0,365	0,827
Lives in a town	-0,307	0,245	0,211
Log pseudo likelihood	-70.853185		
Number of obs	148		
Wald chi2(14)	23,850		
Prob > chi2	0,048		
Pseudo R2	0,170		

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