Time with Children: Do Fathers and Mothers Replace Each Other

When One Parent does not work?

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Time with Children:

Do Fathers and Mothers Replace Each Other when One Parent is Unemployed?

Abstract: This article aims to study the transfers of parental time between the mother and the father. Taking the "experience" of unemployment as a release from the time constraint, we analyse time transfers between partners in such a situation. A bivariate tobit model is applied on the French time-use data. It shows that parents quite rarely transfer their time devoted to children, through some parental activities, such as child transportation and childcare are transferable. Parents wish to preserve their parental activities, which reflect both their bargaining power and their desire to contribute to the children's education.

Keywords: parental time, childcare, unemployment, family time use, household division of labour

1. Introduction

Within the domestic workload, parental activities have a special status. Not only do parenting tasks form an emotionally charged activity, but also compared to domestic tasks, there is a huge cultural and normative pressure to be considered as a "good parent". Moreover, they are often more highly valued than housework, in so far as they represent a long-term investment in education. Economic analysis of the family takes this specific quality into account: along with financial spending, parental time constitutes an investment in "child quality." Thus, children's well-being and development depend, to a great extent, on the time their parents

spend with them (Büchel and Duncan, 1998; Cooksey and Fondell, 1996), with the quantity and the length of the contacts providing an objective indication of the care given to children (Becker, 1965). Children are also at the heart of the family relationship, and the time spent with them can be a factor at stake in negotiations, in power sharing between partners in the context where divorce and separation are increasingly frequents (Barrère-Maurisson and Rivier, 2002; Del Boca and Ribero, 2001). Furthermore, among domestic tasks, time devoted to childcare is one of the most evenly shared between partners (Hamermesh, 2000; Gronau, 1997).

In a context of increasing female labour force participation on the one hand, and increasingly frequent partner separation on the other, the question of the sharing of parental time between partners is becoming more and more important. A growing literature shows that the father's involvement with children, and not only the mother's, increases children's well-being (Silverstein and Auerbach, 1999; Crockett, Eggebeen, and Hawkins, 1993; Easterbrooks and Goldberg, 1984). Nevertheless, most families do not practise shared parenting; mothers perform a disproportionate share of parental tasks. The question we will address in this paper is whether mothers and fathers can replace each other. Can either parent do any one of the various tasks involved?

In order to test this hypothesis, the literature dealing with the division of time between partners usually studies the impact of women's employment on fathers and mothers' time with children (Bianchi, 2000; Hofferth, 2001). We adopted an opposite strategy by looking at the situation where one of the household members faces a sudden change in his or her time constraints, i.e. when one of the parents loses his/her job1. Since French unemployment is, in

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[1] We did not consider inactive (or out-of-labour-force) women because they are likely to have chosen this status in order to take care of and spend time with children, whereas unemployment is considered as an external shock (cf. later).

most cases, an exogenous shock for the family, it represents a sort of "natural experiment" of both a financial loss but also a time gift in terms of time-sharing. Indeed, the unemployed parent's time constraint is much more flexible and she/he can spend more time with the children. This raises a number of questions. Does this increase in the time available for all activities increase parental time? Is parental time transferred from one partner to the other? Lastly, if a time transfer takes place between partners, is it symmetrical, i.e. does it make a difference whether the mother or the father is the unemployed person?

If parental time can be transferred between partners, maternal and paternal time should vary in opposite directions: a fall in one partner's market time should increase their parental time and thereby diminish the other partner's parental time, in which case there would be a transfer of parental time. Conversely, if the parents play complementary roles, maternal and paternal time should evolve in the same direction: the unemployed person and his/her partner both increase (or less probably decrease) their parental time. In other words, both parents enjoy activities with the children and they prefer for both parents to be involved. Hence, by comparing the division of parental time in dual-earner couples with that of couples including one non-working person, we will analyse possible transfers of parental time between partners, and thus specialisation between spouses. We will focus on the couple as a unit of analysis. We study how the activity status of both parents affects couples' combined time allocation to their children, as well as the separate allocation of mothers and fathers.

Our empirical research studies the case of France, which is particular in many respects. First, the proportion of full-time working mothers is high compared with other European countries (according to Eurostat LFS, more than 60% of mothers aged 20 to 49 with a child under the age of twelve work full-time, and 15% work part time). Hence, 70% of couples with one child are dual-earners. Second, the unemployment rate is high, 10,1% in April 2006 (12,4% in 1999, the year studied, according to INSEE), which indicates that unemployment is

largely involuntary. This framework allows us to examine further the question of the impact of unemployment on family life. Lastly, French parental time is rather low compared with other countries (Gauthier, 2005) but France is also remarkable for its high fertility rate. One possible explanation is the extensive availability of day-care centres. Parental time seems to be readily transferable to the public sphere.

In France, the results of the last Time Use survey showed that the division of work between partners remains traditional (the woman doing most domestic chores), especially for parents with children under three (Anxo, Flood and Kocolu, 2002). Unemployment leads to an increase in the duration of most non-market activities, as well as their diversification (Letrait, 2002). In particular, non-working people (men and women) spend more time on domestic work than employed workers. There is also a transfer of domestic time between partners, from the man to the woman or from the woman to the man; this is particularly true for the most basic daily tasks (Solaz, 2005).

In order to answer these questions, we used the data from the Time Use survey conducted in 1998 and 1999 by INSEE (Institut National de la Statistique et des Etudes Economiques), the French national statistics office. A sample of couples with one non-working partner and one working partner is compared with couples where both partners are working full time[2]. We compare both partners' time investments and distinguish various types of activities devoted to children: leisure time, homework, daily care, and transportation.

The article first presents the literature on time allocation between partners, then the concepts and the data used. We assess the changes in parental time when one parent is unemployed. Lastly, using a multivariate analysis, we study the impact of unemployment on parenting time, while controlling for individual and household characteristics.

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[2] We are not able to compare time schedules in a dynamic way because the survey used is cross-sectional.

2. Models of Time Allocation Between Partners

The economic literature concerning time allocation between spouses primarily underlines the distribution of paid employment, leisure time and domestic work. Parental time is seldom taken into account in studies, be they theoretical or empirical. However, the seminal models of arbitration concerning the quality and quantity of children (Becker, 1965 and Gronau, 1977) already included this sort of time. But relatively few economic studies have explicitly analysed the division of parental time between spouses, except through the introduction of domestic production in the most recent developments in collective models[3] (Apps and Rees, 1997; Chiappori, 1997; Aronsson, Daunfeldt and Wikström, 2001) and research on day-care. In this sense, Del Boca and Ribero (2001) developed a non-cooperative negotiation model for a separated couple exchanging parental time (a private good that was a public one before the separation). Both parents are concerned for the child's welfare and wish to spend time with him. The parent who has not gained custody trades visiting time for money (child maintenance payments made to the parent with custody). The time spent with the child is seen here as a good that provides utility, one of the stakes in negotiations between spouses.

The other key studies related to parental time focus on the impact of having a working mother. Most results come from Australia, Britain and the United States where there is a long tradition of time-use research.

A first set of studies concerns the effect of maternal labour force participation on child development. A heated debate ensued, as the empirical results were contradictory. The most recent studies correcting for family fixed-effect models conclude that there is little evidence that mother's employment negatively affects children's early test scores (James-Burdumy, 2005).

Most of the empirical work on parental time underlines the considerable interdependence of decisions concerning work time and parental time. Many studies on

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[3] For a recent survey of collective models, see Vermeulen, 2002.

changes in parental time over the years show that despite the increasing participation

of women in the labour market, parental time has increased significantly over the last few

decades, (see Gauthier, Smeeding and Furstenberg, 2004 for Canada; Sayer, Bianchi and

Robinson, 2004; or Bianchi, 2000 for the United States; Fisher, Mc Culloch and Gershuny,

1999 for Great Britain), except in Sweden where it fell between 1984 and 1993 (Klevmarken

and Stafford, 1999). These studies show that the professional and family spheres are in direct

competition as far as time is concerned, but that employment does not necessary limit the

investment in parental time. In Canada, for example, the decrease in men's labour time and

personal time allowed them to invest more heavily in parental time, while, for women,

personal time was reduced. In these studies, the mothers' employment status has been treated

as a dichotomy (employed or not), with no recognition that non-working mothers may behave

differently from unemployed mothers.

Other research studies the allocation of domestic time and parental time to calculate the

child's cost. Gustafsson and Kjulin (1994) and Sousa-Poza, Schmid and Widmer (2001),

building upon the traditional Becker-Gronau model, compare the determinants of domestic

time and parental time respectively in Sweden and Switzerland. They both observe that

parental time is positively linked to the number of children and negatively linked to their ages,

and that substantial economies of scale exist. The allocation of domestic and parental time is

not closely linked to socio-economic factors for men (except for the level of education which

has a positive influence), though the opposite is true for women. Wages in particular, have a

significantly positive impact on maternal time, while they have no effect on paternal time.

The few studies which focus on the father's involvement in raising children, estimate

the father's share of total parental time over time. Parental time has increased for women to

some extent, but especially for men, and the gender gap has been substantially reduced

(Gauthier et al., 2004, Bianchi, 2000 for the United States; Fisher, Mc Culloch and Gershuny,

1999 for Great Britain; Bittman 1999 for Australia). Studies investigating the division

of parental time between spouses are even rarer. Nock and Kingston (1988) show on a small

sample of American spouses that husbands compensate for their wives' work, but only at a

particular time (after 6:00 PM). The father's work time affects mothers' leisure time with

children. Gustafsson and Kjulin (1994) and Hallberg and Klevmarken (2003) show that in

Sweden, maternal time increases with the partner's paid labour, while the wife's paid labour

has no significant impact on the time spent by the husband on non-market work. Thus

parental time does not appear to be transferable in Sweden. Finally, the increase in men's

participation in household work mainly concerns time spent on child care (Spitze, 1988). We

will study this division of parental time between spouses in France.

3. Data and Concepts

3.1. DATA: SURVEY AND SAMPLE

In this study, we use the Time Use survey conducted by the INSEE in 1998 and 1999, in

which all adult members (aged 15+) of the 8,186 households surveyed were interviewed. This

was highly advantageous for our study, since information was thus gathered from both

spouses for the same day, enabling us to capture how spouses allocate tasks between

themselves and to take account of the possible overlaps between providers (joint time). This

survey was conducted over the entire year, to avoid seasonal effects, on a representative

sample of the French population. Between the two interview visits, the respondents were

asked to fill out, for a particular day given by the interviewer, a 24-hour diary in which they

recorded their activities, indicating the time spent on each activity, by 10-minute time

periods[4]. The respondents' own words were coded into 144 different types of activities.

Several activities could be performed at the same time, in which case two activities were

listed, one being considered the primary activity and the other secondary. Because secondary

activities were not frequently mentioned in the diaries, we restricted our analysis exclusively to primary activities.

We compared the parental time of working parents with that of couples with one working and one non-working partner. We defined two different non-working statuses for women: unemployed and Out of Labour Force (OLF). Unemployed women reported that they were looking for work and had applied for a job recently. Out of Labour Force women were not looking for a job: they were students, homemakers or retirees[5]. We distinguished between these two statuses for women because they may have chosen to be a homemaker in order to raise their children, whereas unemployment was more linked to labour demand. This distinction was not made for men because very few fathers are out of labour force (18 in our sample).

Our sample is made up exclusively of married or cohabiting couples with at least one child under the age of 15, with both partners filling in the diary. As the parental links within the family were not sufficiently detailed to distinguish children from stepchildren, the term "parents" refers to the partners within the household. Even if the degree of investment in one's own children or one's step-children may differ, it is likely that the parental load weighs on all adult members of the household, whatever the family relation. Moreover, Rapoport and Le Bourdais (2001) show that parental time differs very little between intact and reconstituted families.

So we have 1,810 couples, or 3,620 parents. The average age of the couples is 37.5 years, with the men being 2.6 years older than their partners on average. These couples have, on average, 1.7 children, 28% of them have a child under the age of 3 and the average age of the children is 7.4 years. Regarding their occupational status, in 59% of the couples, both

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[4] The response rate of this survey was 68.2%. Out of the 16,136 respondents, 95.7% filled in the diary.

partners are employed, in 25% the father is employed and the mother doesn't work outside the home, in 13% at least one of the partners is unemployed[6]. 32% of the working mothers are in part-time employment.

3.2. DEFINITION OF PARENTAL TIME

Measuring parental time is a complex operation that depends not only on the quality of the information collected by the survey, but also on the accurate delimitation of activities dedicated to children. According to Gershuny (2000), time diary studies are the most accurate available way to collect information on time spent in non-market activities, especially in child care tasks, which occur with some intermittence, even if studies of this kind are sometimes prisoners of their own design (Folbre et al., 2005). They do not take account of passive time, for instance, or of the mental burden of organizing activities for the children. Furthermore, they are not dynamic data (panel), which would be the ideal data in our case.

Two kinds of measures are used in the literature: an extensive measurement, the total time spent with children, and a restrictive one, which concentrates on active time (see Gauthier, Smeeding and Furstenberg, (2001) for an evaluation of the different definitions). Thus, time spent by parents on an activity not directly devoted to the children in their presence – when a parent prepares a meal while the child is playing in the kitchen for example – is not taken into account. Likewise, family activities (leisure, discussions) are not necessarily counted by the survey as forming part of parental time.

In this research, we use the restricted definition: parental time is defined as the total time given by parents to activities directly and exclusively aimed at the household's children.

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[5] We considered people on leave for more than a month (maternity leave, parental leave, etc.) as out of labour force because they had, for the time being, more free time to devote to children as they were temporarily not working.

This definition makes it possible to measure the time effectively devoted by non-working persons to children in the additional time made available by joblessness. This approach avoids strictly mechanical time reallocations: unemployed persons who are more often at home may spend more time in the presence of children, without necessarily investing more of their time to activities devoted to their children.

Parental time is the sum of maternal and paternal times. Maternal time (respectively paternal time) is the time the mother (father) devotes to activities with her (his) child. Joint parental time is the time spent by both parents together doing activities with their children.

However, different types of parental activity do not involve the same constraints for the parents, nor do they have the same purpose. Some of them may be more pleasurable, may increase the prestige of the parent or may be more strongly linked to the child's well-being (Zick and Bryant, 2001) whereas others are more routine activities. Some take place at home, and others outside. Lastly, some require special competencies (homework). Therefore, four types of parental time have been defined.

- Care time (eating, washing, medical care at home and elsewhere, etc.), which is a routine activity centred around the home;

- Transportation time devoted to children, which is a routine activity centred around the outside world. This special time is more and more important because of an increase in suburbanization and in perceived street dangers.

- Homework time, which is the activity that may be an investment in the future, since it acts on education.

- Social and leisure activities (conversations, reading, playing games at home or outdoors, artistic activities, sports, excursions), which are a fun quality time with children, involve a high level of interaction between parents and children, and are rewarding.

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[6] The remaining 3% are made up of couples in which both partners are inactive or in which the father is inactive and the mother is employed

4. Parental Time Varies According to Employment Status of Parents

4.1. AN UNEVEN INVESTMENT IN PARENTAL TIME, DEPENDING ON GENDER AND
ACTIVITY STATUS

Parental time totals about 2 hours per day: mothers spend 1 hour and 36 minutes on average
with their children, whereas fathers spend half an hour per day (see table 1)[7]. These average
durations conceal large differences between parents. Thus many parents, particularly fathers,
did not allocate any time to their children on the day studied (22% of mothers, 56% of
fathers)[8]. Participant fathers spend in average 1 hour and 10 minutes per day with children.

Mothers and fathers generally perform their parental activities without their partner
and joint parental time is very limited, representing only 8 minutes per day on average. This is
partly due to the definition of parental time being linked with a particular task, often carried
out by only one of the partners. Hence, only 19% of couples have joint parental activities on
the day studied and they devote 19 minutes in average to them on that day.

Parental activities represent only about one quarter of total domestic time (domestic time
totals 9 hours a day in average, with fathers devoting 2 hours and 53 minutes per day to
domestic chores and mothers 6 hours and 9 minutes (see table 2)).

Parental time varies considerably depending on the partners' occupational status (see
table 3). Parental time totals 1 hour and 48 minutes on average when both parents work. It is
higher when one parent doesn't work and exceeds 2 hours per day on average: it amounts to 2
hours and 15 minutes per day when the father doesn't work and the mother does, 2 hours and
20 minutes when the father works and the mother is unemployed, and to 2 hours and 34
minutes when the mother is out of labour force. Overall, the total parental time of the

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[7] The estimate are weighted to ensure representativity of the sample.

[8] If we consider fathers and mothers who participate in parental activities on the day studied, paternal time equals
1 hour and 10 minutes, maternal time a little more than 2 hours.

unemployed/OLF parent increases slightly more when that person is the mother, rather than the father (+ 46 minutes when she is OLF, + 32 minutes when she is unemployed, + 27 minutes when the father doesn't work). In others words, compared with children of dual-earner couples, children spend about half an hour more with their parents when the father or the mother doesn't work.

However, the duration of domestic time varies much more according to the occupational status of parents than that of parental time. Compared with the situation where both parents work, domestic time gains more than 2 hours when the man doesn't work, 117 minutes when the woman is unemployed, and 139 minutes when she is out of the labour force (see table 4). So, although not working leads to an increase in total domestic time, parental time does not necessarily benefit from this increase. Indeed, children are not always available to be looked after by their non-working parents. French children spend many hours at school, with school hours running from 8.30 to 16.30 for children aged 3 to 12 (and with care facilities provided before and after school hours from 7.00 to 8.30 and from 16.30 to 18.00-19.00). The secondary school day starts at 8h00 and ends at 18h00. Moreover, child-care facilities are widely available for children under 3 and the children of unemployed persons may be looked after in day-care centres open at least 10 hours a day.

Despite the fact that not working provides a greater amount of free time, the joint parental time does not vary substantially according to parents' occupational status (see table 2), except when the father doesn't work. Indeed, we observe a significant increase in joint parental time (a twofold increase, + 6 minutes), whereas if the mother is unemployed, joint parental time equals that of dual-earner couples. Thus it would appear that when the father doesn't work, the mother performs part of the parental tasks with him rather than alone. On the other hand, the time made available to the father by the fact that the mother is unemployed is not devoted to joint parental activities.

[Insert tables 1 and 2]

Regardless of the partners' occupational status, mothers spend more time with their children than fathers. Thus, when both partners are employed, the mother accounts for 76% of parental time. Men in dual-earner couples generally do not adjust their time allocation to compensate for their wives' reduced time with the children. When the man doesn't work and the woman is in paid employment, she also participates more actively in parental tasks than her partner (the mother accounts for 53% of parental time), while her participation in other domestic tasks falls below 50% (she performs 48 % of domestic chores, see table 4). So it would appear that the sexual division of work is even more apparent with regard to parental tasks than it is for other domestic tasks. The division of parental tasks is even more unequal when the woman is inactive and the partner is employed (she performs 83% of parental tasks).

Furthermore, the parental activity of mothers seems to be more regular, with three-quarters of working women in dual-earner couples reporting a parental activity on the reference day as opposed to less than half of the men from these couples. 80% of unemployed women and 60% of non-working men carried out a parental activity on the day in question.

Compared with dual-earner couples, maternal time is lower when the father doesn't work (–5 minutes per day, see table 2). Symmetrically, paternal time is shorter when the mother is unemployed (–6 minutes per day) or OLF (–5 minutes per day in average). It seems that the unemployed/OLF partner relieves the working parent of certain parental duties. Does this mean that parental time is reallocated between partners when one parent doesn't work? Before answering that question, we will examine which type of tasks are the more sensitive to occupational status.

4.2. UNEQUAL TIME ALLOCATION BY TYPE OF PARENTAL TASK

Care accounts for most parental time, regardless of the parents' occupational status (see table 5): care represents over an hour of the parental time per day, i.e. more than half of the total. The remaining parental time is distributed between schoolwork, leisure and transportation, the

former taking up slightly less time than the other two. Regardless of activity type, maternal time exceeds paternal time, with the exception of transportation when the father doesn't work. As is the case for other domestic activities, gender-distinct practices exist with regard to parental time: "domestic" parental time is more likely to be feminine while fathers invest more in the social sphere.

[Insert table 5]

All types of parental time are higher when one parent doesn't work, except for schooling time, which does not vary according to the parents' occupational status. However, compared with employed people, the time spent on leisure activities by non-working men increases more than is the case for non-working women (respectively +8 and +3 minutes), whereas non-working women spend more time on childcare and transportation. Unemployed women spend 20 minutes more per day on care than working women (OLF women 37 minutes more), while non-working men devote 18 minutes more than employed men. They respectively devote 14, 11 and 5 minutes more on transportation for children.

For all activities except for social and leisure activities, working women's maternal time is lower when the father doesn't work (–5 minutes per day for care, –2 minutes for schooling time and –4 minutes for transportation compared with women's time in dual-earner couples, see table 5). Symmetrically, paternal time for these three activities is shorter when the mother is unemployed (respectively –5 minutes, –1 minute and –2 minutes). Does this mean that the unemployed partner relieves the other partner of part of the time allocated to various parental activities, except for leisure time which increases for both partners in the case of unemployment? Social and leisure activities are higher when the partner is not working. Thus, the time allocated by a working father to his children's social activities is 2 minutes longer when his partner loses her job, and that of working mothers is 6 minutes longer when her partner loses his. The fact that one parent devotes more parental time to social activities seem to encourage his or her partner to participate, since these activities involve the whole family

more often than not. Are both partners' times complementary for this type of activity, whereas for other types of parental time they seem to be transferable?

4.3. PARENTAL TIME BY NUMBER OF CHILDREN

As expected, parental time increases with the number of children, but having a very young child (under the age of 3) is also an important factor. It increases considerably the parental workload, as found by Rapoport and Le Bourdais (2001) on Canadian data. Unemployment leads to an increase in parental time regardless of the number of children, but the increase appears to be sharpest when there is only one child.

Not only does parental time increase when one parent doesn't work, but time is also reallocated between the partners. However, other factors, besides unemployment, can also influence parental time. To ensure that the analysis is performed independently of structural effects, we estimated the impact of unemployment on parental time while controlling for individual and household characteristics.

5. Method

5.1. ESTIMATING THE MODEL

Our joint estimation of men and women's parental time raises four main econometric problems. The first is the fact that many domestic times were equal to zero on the day of the interview. This specific distribution, i.e. excess weight of an extreme value, causes biases if the usual linear regression models are used. A Tobit model gets around this problem by modelling both the participation (or non-participation) in parental tasks on the day the diary was filled in, and the time spent doing these tasks. The likelihood that the model tries to maximize is made up partly of a function of censored data (or zeros) and a conditional function of non-censored data (value of parental time, in the case of participation). The aim is

to create, within a single model, a model of dichotomous choice (of the Probit type)
and a linear continuous choice model.

The second problem is the possible self-selection of couples affected by unemployment.
To investigate the self-selection issue in more depth, to be sure that unemployed couples are
not particular, we estimate the probability of being unemployed. The results show that only
traditional covariates such as education, age and marital status, which are already in our
models (hence controlled) are significant. Among all the other individual explanatory
variables in the model, none explain the probability of unemployment. In particular, the
number and age of children as factors of risk are not significant. Only one environmental
variable, i.e., the unemployment rate, increases the likelihood of being unemployed. Being
unemployed in France in the 1990s seems to result from a bad economic situation rather than
a selection bias. We then have to assume our samples of couples affected by unemployment
or otherwise are comparable, once controlled by many covariates. The unemployment rate
stands at a high level in France: 12.2% in 1998. Relatively few women (in comparison with
other European countries) stop working after a birth: 68% of mothers of a child under 12 are
still working (of which 19% are working part-time), against 78% of non mothers (of which
10% are working part-time).

The third problem is the possible endogeneity of the unemployed. It is easy to imagine a
situation where a parent, wishing to spend more time with his/her children, decides to leave
the labour force for example. This introduces a bias. Though the endogenous nature of the
situation on the labour market seems obvious with regard to inactive individuals, since their
situation may be the result of a decision to leave the labour force to cope with an increase in
household duties, for instance, it is not as clear with regard to the variable we are interested in
here, i.e., unemployment, even if it remains a possibility. As shown by the answers to the
specific questions put to the unemployed in the survey, the fact that an individual is
unemployed does not seem to indicate a deliberate choice to devote more time to domestic

work rather than to income-generating work. In our sample, the average duration of unemployment is 20 months for men, 23 months for women, which indicates a relative shortage of jobs. Three-quarters of the unemployed reported having looked for work over the last three months, 70% had sent at least one application (50% had sent more than five) and 88% would accept a job beginning in the next two weeks. In spite of broader eligibility for unemployment benefits compared with other developed countries (2/3 of unemployed men and 60% of unemployed women in our sample receive unemployment benefit), the replacement rate and all above all the digression rate, make unemployment unattractive compared with employment. Indeed, the replacement rate is 40.4% of the previous daily wage, plus a fixed amount (9.56 euros), or 57.4 % of the "reference daily gross wage". The digression rate is 17% every 6 months. Unemployed people are not entitled to unemployment benefit if they quit their job. For all these reasons, we assume that French unemployment is mainly involuntary and hence not endogenous.

Furthermore, we attempted to take the heterogeneous nature of unemployment into account to control for its possible endogeneity. We carried out tests using different definitions for unemployment, based on its duration (long-term or short-term unemployment), active efforts to find employment (were job applications made over the previous three months or not? was time spent looking for a job on the day of the survey?). The results remain the same regardless of the specifications chosen, but as the size of the unemployed category falls, the significance thresholds increase. That is why we chose to use the "declared" definition, i.e. the widest.

Lastly, the parental time of women and that of men can be correlated. It is now necessary to make a model of both paternal and maternal time. For this purpose, a bivariate tobit regression was estimated. The correlation results can be found on the bottom line of each table.

The bivariate tobit model (Maddala, 1999) represents the parental time of both partners simultaneously, taking possible interdependent factors into account. y_h and y_f are respectively the observed parental times of the man and the woman, $y_h{}^*$ and $y_f{}^*$ are the associated latent variables. y_h and y_f are likely to suffer from an "excessive-zeros" problem. We assume that $y_h{}^*$ and $y_f{}^*$ are determined by the following equations:

$$y_h{}^* = \beta_h x_h + \varepsilon_h \quad \text{and} \quad y_f{}^* = \beta_f x_f + \varepsilon_h$$

where ε_h and ε_f obey a normal two-dimensional law with $E[\varepsilon_h] = E[\varepsilon_f] = 0$ and

$Var[\varepsilon_h] = \sigma_h{}^2$, $Var[\varepsilon_f] = \sigma_f{}^2$, $Cov[\varepsilon_h, \varepsilon_f] = \rho\,\sigma_f\,\sigma_h$. ρ is the correlation coefficient.

Our sample selection problem can be represented by distinguishing between four cases where both parents have a parental time exceeding 0, where only one parent has a parental time equal to 0 or where both parents have a parental time equal to 0.

Then the total likelihood is:

$$\pounds = \prod_1 f(y_h - \beta'_h x_h, y_f - \beta'_f x_f) + \prod_2 \int_{-\infty}^{-\beta'_f x_x} f(y_h - \beta'_h x_h, \varepsilon_f)\,d\varepsilon_f +$$

$$\prod_3 \int_{-\infty}^{-\beta'_h x_h} f(\varepsilon_h, y_f - \beta'_f x_f)\,d\varepsilon_f + \prod_4 \int_{-\infty}^{-\beta'_h x_h} \int_{-\infty}^{-\beta'_f x_x} f(\varepsilon_h, \varepsilon_f)\,d\varepsilon_f\,d\varepsilon_h \qquad (3)$$

where $\prod_i$ denotes the product over all observations in case i, and f the density bivariate function of normal distribution.

An individual's market work is expected to reduce his/her time spent with children. If the mother's and the father's parental time are transferable, we would expect the father's parental time to increase when the mother works while the father is unemployed. However, if they are complementary, the sign of this coefficient may be reversed.

5.2. VARIABLES

The dependant variables are the "net" maternal and paternal time, i.e. the time spent alone with the children. The variables of interest are the dichotomous variables related to the occupational status of each partner: woman employed full-time, non-working man, unemployed woman, OLF woman. People in full-time employment are used as the reference group.

We control for the number of children in the household, the children's ages, the household income (which includes wages as well as non-work income from all household members) and the day of the week. We also add the man's socio-occupational category, which is a crucial explanatory variable of social behaviours in France. The French socio-occupational classification is based on the last job when people are unemployed or out of labour force. It can be assumed that the time spent by the two partners on housework falls as income increases, insofar as high income levels make it possible to buy market substitutes for domestic production. However, regarding parental time, if the parents value the children more than they do leisure, parental time should increase alongside household income. We introduce a dummy variable representing the use of hired help for housework (8% of our sample hire a domestic help). We will examine whether or not parents devote more parental time to children when they hire help for household tasks. Such a variable makes it possible to test whether or not there is substitution between domestic tasks and parental tasks when a market substitute is available for domestic production. The average age of the couple makes it possible to measure changes in attitude from one generation of couple to another, with younger generations adopting a less traditional division of tasks and placing a greater value on time spent caring for children. The partner's level of education also has an impact on the individuals' attitudes and values, a higher level of education encouraging a more egalitarian division of tasks (Hersh and Stratton, 1994). Furthermore, if better educated parents are well informed on the positive impact of parental time on their children's development, it can be supposed that the

most highly educated parents will spend the most time with their children. Nevertheless, the impact of parents' education on parental time depends on how educated parents value children relative to other sources of income. According to non-cooperative bargaining models, age differences between partners indicate a strategic advantage in favour of the older of the two. This variable serves to indicate domination (Anxo and al., 2002)[9].

6. Results

6.1. PARENTAL TIME, ALL TASKS COMBINED

Net parental time is less dependent on the household's socio-economic characteristics than is total domestic time (Brousse, 2000; Zarca, 1990). If educational level, income, socio-occupational category are significant explanatory factors of the time devoted to domestic tasks, they are less so for parental time (in accordance with the Canadian results of Rapoport and Le Bourdais, 2001) (see table 6). A possible reason is that the population of parents is more homogeneous: the lifestyles of couples with children are less different from one population to another than the lifestyles of couples without children. For instance, leisure time, which is strongly influenced by class and lifestyle differences, decreases with the birth of a child. Children require a minimum amount of care which cannot be reduced or postponed, which is not the case for other domestic tasks. Furthermore, due to the emotional component of parental activities, parents are less likely to call upon market substitutes, no matter what their income. Lastly, domestic tasks are more varied. For example, taking care of a garden or a house depends largely on personal tastes and preferences and can be expressed in a more distinct manner through domestic time than parental time.

However, certain salient facts do appear clearly. Total parental time logically increases with the number of children, but only for women. But the age of the children is more

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[9] Matrimonial legal status was tested but was not significant, as was the case for Rapoport and Le Bourdais (2001) for Canada.

significant than their number. Lefevre and Merrigan (1999) and Rapoport and Le Bourdais (2001), using Canadian data, also showed that parental time falls as the children grow older. Thus, parents with at least one child under three devote much more time to parental activities. It is clear that children under three also require more time because they need more care. Besides, older children require less specifically parental tasks, less direct and constant supervision. Yet the way the various activities were constructed by the Time-Use survey accentuates the importance of tasks oriented towards very young children (Algava, 2002). Having a school-aged child (3 - 10 years) also increases both mother's and father's parental time. For any given number of children, the presence of children older than 10 tends to reduce the time the mother and father spend with the children. These children can help their younger siblings thus relieving parents of part of their parental workload.

[Insert table 6]

The father's level of education and the social category have an impact on paternal time. As in many other studies (Yeung and al., 2001), men who have graduated from higher education tend to dedicate more time to parental tasks than non-graduates. So the division of tasks appears less inequitable as the father's level of education increases. On the other hand, all other things being equal, men in managerial positions, as well as farm workers, artisans, trades people and business owners spend less time on parental activities. This separation can be explained by their longer working hours (usually having a negative impact on paternal time) probably accompanied by a different conception of men's and women's roles.

A generation effect can also be observed among the youngest couples, with the woman and man spending less time on parental activities. The age difference between partners (age of the man minus age of the woman) does not have a significant effect, which is a sign that the division of labour does not obey a more traditional pattern if the man is older. Being older does not give the man any power of domination or, if it does, he does not take advantage of his dominant position to unload parental activities onto his partner.

Once controlled by income level, whose impact is weak, recourse to external help has no impact on the father's parental time but increases that of the mother: we observe a substitution effect between women's domestic and parental tasks. For men, hired help has no significant impact on their domestic tasks either (Solaz, 2005). For women, hired help for household tasks frees time which can then be devoted mainly to the children. Women opt out of less important production tasks (housecleaning) to spend greater amounts of total home time with their children. There is an obvious substitution effect between parental and domestic times.

As observed for the United States (Sayer, Bianchi, Robinson, 2004), mothers who complete the diary on a weekday spend more time in childcare relative to mothers who complete it on a weekend. This result is counter-intuitive, as mothers are expected to have more time available for their children on weekends. Sayer et al (2004) and Gauthier et al (2004) suggest an exchange of parental activities between partners during the weekend, as women do more of the weekday care. This explanation is not valid, as fathers do not significantly increase their participation on the weekends. An alternative explanation may be that mothers spend time with children on the weekends in activities that are coded as leisure time rather than direct childcare.

Lastly, our variables of interest pertaining to the occupational situation are influential for both men and women. Unemployed men and women participate more in activities with children, but the unemployment effect is not as clearly marked for women (coefficient 0.5 compared with 1.9 for men), because employed women already spend more time with their children than men with the same status. This result points in the same direction as those of Hallberg and Klevmarken (2001) taken from Swedish data showing that a change in the number of hours worked by the mother has less impact on parental time than a change in men's working hours, and any policy aiming to increase the time parents spend with their children should use the father's working hours as its target.

On the other hand, the occupational status of one partner does not have much impact on the time spent by the other partner with the children. In this sense, several studies focusing on the effect of maternal employment showed that the working hours of women had no significant effect on father's time with children (Pleck, 1997; Zick and Bryant, 1996). The unemployed man does increase his participation in parental tasks, but he does not relieve his partner of part of her tasks performed with the child[10]. Similarly, the fact that the woman is unemployed or works part-time does not have a significant impact on the time devoted to children by the father. It should, however, be remarked that in the man's regression, OLF mothers tend to slightly decrease working men's participation in parental time. If this is the case, then parental time is only transferable from men to women in the case of OLF mothers who have been absent from the labour market for a long period.

It should be noted that woman's part-time employment has no impact on parental time. One possible explanation for this is that part-time work is not necessarily chosen, it can be the result of the development of part-time jobs on the labour market. Part-time contracts with split schedules (with shifts in the morning or late at night) or the atypical working hours of some jobs make it impossible to set aside time for domestic and parental activities. Women who choose part-time employment may take advantage of a lighter workload to organize the day in a more manageable way, and not necessarily to spend more time with the children.

In the light of these first results, it seems that parental time is not really transferable. It is possible that parental time is too heterogeneous for the transfers that take place within the couple to appear at this level, so we differentiated parental time on the basis of the type of parental task carried out (cf. paragraph 6.3). But, before going further, let us describe joint parental time.

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[10] In the regression carried out for men, the coefficient of the variable man unemployed/working woman is significantly positive, whereas in the regression performed for women, the coefficient of this variable is not significantly different from zero

6.2. JOINT PARENTAL TIME

Parental time spent together by both parents is relatively limited. This is largely influenced by the number of children and their ages (see table 6). The bigger the family, the more the parents carry out parental tasks together. The presence of a child of pre-school age also considerably increases this joint time. Regardless of the children's ages, the youngest couples also tend to spend more time together carrying out parental tasks. People from a disadvantaged background, either financially (low income) or due to a lack of educational capital (no qualifications) tend to reduce the parental time spent together. Long or atypical working hours (such as those of many trades people, farmers or managers) do not encourage investment in time spent together with the children. Schedule compatibility and the availability of both parents at the same time are, effectively, a necessary condition for observing parental activities being carried out together.

The most interesting observation is the over-investment in joint time by unemployed people: when men are unemployed, they dramatically increase the time they spend with their partner taking care of the children. It is possible either that the unemployed man chooses to help his partner with her usual tasks, or that the partner finds it difficult to hand over her parental tasks to her partner and therefore prefers to do them with him. This result could also be seen as a sign of partners "sticking closer together" within the family unit, in times of adversity. Nonetheless, this tendency is not noticeable when it is the woman who finds herself unemployed.

6.3. PARENTAL TIME BASED ON THE TYPE OF TASK

This section aims to study in greater detail how parental time is distributed among four main realms: care, schoolwork, social time (playing, talking, leisure) and transportation. If, as observed, unemployed parents invest more time in parental duties, which realms are in fact

preferred? Are some tasks more likely to be transferred from a working parent to a parent temporarily out of work? For each type of parental activity we estimated a model which is identical to that presented previously. Table 7 lists the results concerning our variables of interest. (The results of the complete set of estimates can be obtained from the authors).

It clearly emerges that when a man is unemployed, his participation in care and transportation tasks increases. On the other hand, unemployment has no impact on the level of play and leisure activities. This result stems from the fact that leisure and social activities are often shared. Woman's unemployment (or inactivity) only affects the time allotted to care activities. When they are unemployed, men and women transfer their extra time to specific parental activities without a paid substitute. Thus, time spent on caring and transportation increases significantly. But unemployment has no effect on parental time assigned to the children's social activities; so play activities do not benefit from unemployment. School time is not affected either. Habit (being used to doing homework with the same person every night) and/or competence (only one partner is capable of helping the children) make it more difficult to transfer this task from one parent to the other in times of unemployment.

Conversely, parental time transfers between partners are visible when one of the parents is unemployed. Unemployed women take over some caring activities from their husbands, while unemployed men do not seem to take over this type of parental task. On the other hand, children's transportation time is exchangeable because both men and women reduce the time their partner spends on this activity.

[Insert table 7]

Thus, men take advantage of unemployment to participate in activities such as caring, in which they have little involvement when both parents are working, but they do not relieve their partner of these tasks. The fact that care activities are not transferable may be explained by the lesser "productivity" of men in this type of task (it takes them longer to do them), but

also by women's reluctance to be relieved of their maternal tasks in a situation where the traditional family pattern is reversed (the man at home and the woman working). According to Sanbderg and Hofferth (2001), mothers place a high value on the time devoted to activities with children and it receives priority over other demands. Cultural factors, and particularly the strong social pressure that attributes child-raising to women, can, in part, explain this behaviour. For instance, the policy aimed at very young children implicitly addresses women, and childcare personnel are almost exclusively feminine in France. This orientation is clearly illustrated by semantics, as home child carers are known as "*assistants maternelles*" and nursery schools as "*écoles maternelles*".

Transportation activities, which happen outside the home, may help unemployed people create new social links, now that their lives are directed towards the interior. This is why they are easily transferable between partners. Thus, an analysis of how different household tasks are appreciated shows that unemployed people prefer activities that get them out of the house (the question asked was *"Do you consider this task mainly as 1) a chore 2) a task which you do not mind doing 3) a pleasurable activity."*). Overall, there are no large differences in the appreciation of different domestic tasks between working and unemployed people, except for shopping. Indeed, this activity (the only one on the list that requires leaving the house) is considered to be a "chore" by 34% of working men and 38% of working women, whereas only 16% of unemployed men and 25% of unemployed women consider it as such. It is considered "pleasurable" by 32% of unemployed men and 19% of unemployed women, as opposed to 17% of working men and 13% of working women.

The most highly valued tasks, such as education and leisure time, remain unchanged by unemployment. These activities, which are the expression of a long-term investment in human capital, are tasks that the parents hold on to, even when their partner has more free time. For leisure, an over-investment can be observed on the part of men with an unemployed partner, which indicates that this sort of parental time is a relatively complementary good.

The presence of an non-working parent results in a more widespread reorganization of parental time. The only transferable activities are transport time and care time, and this substitution is not symmetrical as far as care is concerned. Social activities and leisure are more likely to be complementary.

6.4. PARENTAL TIME: AT STAKE FOR THE COUPLE?

In France, like in Sweden and the USA, a reduction in a parent's number of working hours is not often transferred to caring for children, yet other time spent on domestic activities increases. Despite high female labour force participation, the sexual division of work is considerable, even in countries that favour gender equality. It is even more apparent with regard to parental tasks than for other domestic tasks.

But the various types of time reallocation that take place between partners are quite eloquent. They show that parental time is not an ordinary domestic task; it is doubtless more pleasurable, at least less troublesome and more highly valued than other tasks. It also represents an investment of human capital in a common good, the child. Leaving childcare to the other parent also means losing one's authority, one's right to intervene in the child's education, and forsaking that right reduces one's power of negotiation not only in the present, but also in the future, in the event of divorce or separation. So, when a man is older than his companion, he does not use his position of power to carry out fewer parental tasks, since there is competition for these tasks within the couple.

Furthermore, the least valued tasks (care time and transportation) are the most easily transferred from one partner to the other, when one parent doesn't work. Conversely, the most socially prestigious tasks and those involving an educational role (school and social time) are less easily left to a partner, even if the partner in question has more free time available. This result is consistent with the numerous studies that suggest that the rise in maternal

employment over time has not led to significantly reduced maternal or paternal time (Budig and Folbre, 2004).

7. Conclusion

In this article, we focused on a specific type of time which forms part of domestic time, i.e. parental time. Since the total available time in one day (24 hours) cannot be extended, transfers necessarily occur between the different types of time in an individual's schedule and between the schedules of individuals from the same household, whenever any surplus time is available due to lack of work on the labour market.

The first observation is that French unemployed men and women spend more time with their children. However, due to children's fixed schedules (time spent in school, sleep), the increase is rather limited, compared with the increase in the time devoted to other domestic activities.

Moreover, when a partner is unemployed, there are few time transfers between parents. Even when the unemployed parent devotes more time to the children, his or her partner's parental time does not significantly decrease. The children of an unemployed parent see about as much of either parent, whereas the distribution of domestic tasks becomes even more unequal when the mother is unemployed.

In answer to our question, we can say that parental time is only very partially transferable when a parent becomes unemployed: the only exchangeable activities are transportation time and care time, while social and leisure activities are complementary goods. It seems that each partner wishes to hold on to his or her parental activities, even if the other partner has more time to devote to them and does spend more time on them. A partner's participation in parental activities may thus reflect his or her power of negotiation and desire to contribute to the child's education.

In conclusion, the transfers remain asymmetric in almost all cases: men are more willing to abandon – or women to take over – their activities with their children, than the opposite.

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Table 1. Parental Times (minutes per day)

	Mean time	Std, Dev,	Zero	% participation	Mean time of participants	Nb of participants
Parental time	127	121	325	82%	155	1505
Father's Parental time	31	54	1018	44%	70	829
Mother's Parental time	96	98	398	78%	123	1438
Joint Parental time	8	20	1462	19%	19	762
N	1810					

Note: Data from the French Time Use survey (INSEE), author's calculation, OLF = out of labour force.

Table 2. Domestic Times (minutes per day)

	Mean time	Std, Dev,	Zero	% participation	Mean time of participants
Domestic time	542	250	1	100%	542
Father's Domestic time	174	162	212	88%	196
Mother's Domestic time	369	175	5	100%	369
Joint Domestic time	105	120	417	77%	134
N	1810				

Note: Data from the French Time Use survey (INSEE), author's calculation, OLF = out of labour force.

Table 3. Parental Time by Partners' Occupational Status (minutes per day)

	Both work	Father not working	Mother unemployed	Mother OLF
Parental time	108	135	140	154
Father's Parental time	31	63	24	26
Mother's Parental time	77	72	116	128
Joint Parental time	7	13	7	8
	1072	60	118	459

Note: Data come from the French Time Use survey (INSEE), author's calculation, OLF = out of labour force.

Table 4. Domestic Time by Partners' Occupational Status (minutes per day)

	Both work	Father not working	Mother unemployed	Mother OLF
Domestic time	479	607	596	618
Father's Domestic time	162	314	145	144
Mother's Domestic time	164	293	451	475
Joint Domestic time	116	143	106	100
N	1072	60	118	459

Note: Data from the French Time Use survey (INSEE), author's calculation, parental time is excluded from domestic time, OLF = out of labour force.

Table 5. Parental Time by Tasks and Partners' Occupational Status

	Mean	Both work	Father not working	Mother unemployed	Mother OLF
Care					
Total	75	63	76	79	95
Men	14	15	33	11	10
Women	61	48	43	68	85
Schooling time					
Total	12	11	12	12	12
Men	3	3	5	1	4
Women	9	9	7	11	9
Social and leisure activities					
Total	19	17	30	22	21
Men	9	7	15	9	8
Women	11	9	15	13	13
Transport time					
Total	21	17	18	28	26
Men	5	5	10	3	4
Women	15	12	8	25	23
N	1810	1072	60	118	459

Note: Data from the French Time Use survey (INSEE), author's calculation, OLF = out of labour force.

Table 6. Paternal, Maternal and Joint Times (bivariate tobit or simple tobit regressions)

Variable (reference modality)	PATERNAL TIME		MATERNAL TIME		JOINT TIME	
	Bi-tobit model				tobit model	
	B	*SE B*	*B*	*SE B*	*B*	*SE B*
Activity status (FT worker)						
Woman OLF	-.722**	.294	.682***	.204	.135	.388
Woman unemployed	-.465	.426	.542*	.297	.368	.550
Woman PT worker	-.314	.281	.167	.197	-.262	.381
Man OLF	1.855***	.479	.227	.334	3.096***	.598
Children (1 child)						
3 children and more	.558	.357	.672**	.249	.925**	.372
2 children						
	.280	.272	.487***	.188	1.352***	.478
aged less than 3	2.027***	.296	1.814***	.209	2.661***	.382
aged 3 - 10	1.270***	.292	1.089***	.199	.909*	.398
Woman's education (secondary)						
University (3+ years)	.438	.447	.329	.322	.881	.558
University (2 years)	.304	.376	.042	.269	-.209	.496
Vocational	-.282	.319	-.387*	.224	-.174	.420
Primary	-.821*	.391	-.585**	.268	-1.182**	.536
Man's education (secondary)						
University (3+ years)	1.118***	.436	-.006	.303	.988*	.529
University (2 years)	-.445	.500	.196	.308	.476	.619
Vocational	-.105	.460	-.365	.327	-1.295**	.647
Primary	-1.212**	.399	-.135	.276	-1.542**	.535
Man's social group (employee)						
Worker						
	-.324	.368	-.359	.259	-.675	.474
Intermediate-level occupation	-.192	.392	-.226	.278	-.645	.508
Manager	-1.182**	.501	-.226	.354	-1.403**	.649
Farmer, tradesman	-1.527***	.459	.067	.314	-2.128***	.630
age difference between partners	.005	.024	.006	.017	.008	.032
mean age of partners	-.079***	.022	-.058***	.015	-.094***	.030
Weekday	.082	.232	.896***	.163	-.246	.521
Household income (< 7000 francs)						
7000-10000 F	-2.161***	.586	-.490	.376	-2.753***	.817
10000-14000 F	-.547	.356	-.115	.244	-.660	.467
14000-17500 F	-.399	.320	-.064	.224	-.690*	.430
17500-21000 F	-.181	.377	-.136	.266	-.403	.504
21000-35000 F	-.144	.411	-.656**	.291	-.123	.544
> 35000 F	.011	.665	-.382	.471	.896	.833
Unknown	-2.411**	1.123	-1.299*	.689	-1.700	1.612
Domestic help	-.137	.402	.621**	.287	-.540	.521
Intercept	2.842***	1.015	3.596***	.709	.248	1.343
Correlation of errors			.24			
Zeros					1424	
non zeros					401	
N (partnerships)				1825		

Note Gray boxes: time reallocation between partners, *** $p < .001$ ** $p < 0.01$ * $p < 0.1$
OLF = Out of labour force, PT = part-time job, FT= full-time job.

Table 7. Paternal and Maternal Times by Type of Task (bi-tobit model)

Activity status	Care Time				Schooling Time				Social and Leisure Activities				TRANSPORT TIME			
	Men		Women		Men		Women		Men		Women		Men		Women	
	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B
Woman (ref: Full time worker)																
Out of labour force	-1.53***	.37	.88***	.27	-.23	2.21	2.95	2.95	.07	1.10	1.09	1.13	-2.70***	.89	1.34	.89
Unemployed	-1.13**	.55	.67*	.40	-3.47	3.92	6.90	4.43	2.56*	1.55	.94	1.67	-2.27*	1.33	1.93	1.33
Part time	-0.62*	.37	.09	.28	-2.01	2.35	2.52	2.96	0.22	1.14	-.45	1.18	-.69	.85	0.70	.92
Man (ref: worker)																
Unemployed	1.48***	.56	.48	.42	.72	3.64	-3.11	4.92	1.11	1.69	-.20	1.83	2.57**	1.29	-3.35**	1.54

Note: *** p < .001   ** p < 0.01   * p < 0.10 tobit regressions controlled by children number and ages, woman and man's education, couple age mean and difference, domestic help and week day.