The Effects of Unemployment on Time Use: Individual and Household Approaches*

Jose Ignacio Gimenez Nadal — University of Zaragoza

José Alberto Molina — University of Zaragoza and IZA

January 28, 2009

Draft version. Please, do not quote

Abstract

We analyze how unemployment affects the time use of couples from both individual and household approaches. Specifically, we analyze the effects of unemployment on core activities such as cooking, ironing, or basic childcare, on time stress reported by individuals, and on synchronous leisure and leisure with others (togetherness in leisure). Using the Spanish Time Use Survey 2002-2003, we find, at the individual level, that own unemployment increases the time devoted to childcare and housework activities, and we find differential gender crossed effects, since unemployment in men does not affect the time devoted to childcare by women, and unemployment in women does not affect the time devoted to housework by men. At the household level, we first find that couples with unemployed individuals devote more time to housework and childcare activities, consistent with Becker's theories of household production, since time intensive commodities are produced more in households with unemployed individuals. Second, unemployment does not affect the time stress of men, while unemployed women report lower levels of time stress, consistent with the economic literature arguing that working women face a "double burden" or "second shift". Third, we find that while unemployed wives desire more synchronous leisure with their husbands, husbands do not.

JEL Codes: D13, J16, J22
Keywords: Unemployment, Time Use, Time Stress, Individual and Household Approaches

---

* We are grateful for the financial support provided by the Spanish Ministry of Education and Science (Project ECO2008-01297).

Correspondence: Jose Ignacio Gimenez Nadal, Department of Economic Analysis, Faculty of Economics, Gran Via 2. 50005 – Zaragoza (Spain). Tel.: +34 976 76 46 53 Fax: +34 976 76 19 96. e-mail:ngimenez@unizar.es

1. INTRODUCTION

The 2008 economic crisis, which has been compared to the 1930s depression, is affecting individual agents and families through job losses and wage freezes. Most countries, including the US and the EU, have experienced a dramatic increase in their unemployment rates during the year 2008. For instance, the US has experienced a lost of 403,000 jobs in September, 320,000 in October and 533,000 in November, with the unemployment rate reaching 6.7% (Bureau of Labor Statistics [2009]). For the UK, unemployment levels reached 1.86 million in December 2008, a rate of 6%, and is expected to reach 2 million in 2009.

Economic models of the household emphasize the "gains from marriage", namely, the benefits of forming a marriage/partnership such that both partners experience an improvement in their well-being. Among economic models of the household, Becker's theory of household production (Becker [1965]) is based on the assumption that individual utility within the household depends on "commodities", which are produced using both consumption goods and time. Thus, given that unemployed workers experience increased non-market time, with the usual consequences for household production, it is relevant to analyze how spouses respond to each other's unemployment.

Additionally, it has been found that an individual's time use choices may be contingent on the time use choices of others, since the utility derived from leisure time often benefits from the presence of companionable others (Jenkins and Osberg [2005]). Hamermesh [2000] finds evidence for the USA that couples arrange their work schedules to allow time for jointly consumed leisure. Halberg [2003] finds a positive effect of coordination on synchronous leisure, and that market work and leisure timing are very intra-household dependent. Given this evidence, it is also important to study whether unemployment of individuals has significant effects on timing and togetherness in leisure, since there are still 24 hours in the day, which must be filled with something other than market work.

Moreover, as argued by Hamermesh and Lee [2007], substantial attention has been paid to the issue of a "time crunch", that is to say, a shortage of time faced by today's worker/consumer. However, given that the unemployed are restricted to allocating their time in activities other than market work, we analyze whether unemployment has negative consequences on the perceptions of time stress. Additionally, some authors have pointed

out the hypothesized intra-household dependency of time use. Thus, it is also appears to be relevant to analyze the effects of spouse's unemployment on own time stress.

Against this background, this paper examines how spouses respond to each other's unemployment using both individual and household approaches. Specifically, we first focus on the effects of unemployment on own and partner's uses of time (total time devoted to activities and togetherness in leisure), and on the total time devoted to time-intensive commodities (cooking, ironing…) within the couple; and, secondly, we study the effects of each spouse's unemployment on own time stress. To that, we use the Spanish Time Use Survey (STUS) 2002-2003, which allows us to analyze the time devoted to different time use activities by both members of the household.

This paper reaches three significant conclusions. First, we find that own unemployment increases the time devoted to childcare and housework activities, and we find differential gender crossed effects, since unemployment in men does not affect the time devoted to childcare by women, and unemployment in women does not affect the time devoted to housework by men. At the household level, we find that couples with unemployed individuals devote more time to housework and childcare activities, consistent with Becker's theories of household production. Second, unemployment does not affect the time stress of men, while unemployed women report lower levels of time stress, consistent with the economic literature arguing that working women face a "double burden" or "second shift". Third, we find that, while unemployed wives seem to desire more synchronous leisure with their husbands, unemployed husbands do not.

The paper is organized as follows. Section 2 briefly reviews the literature concerning unemployment, time use and time stress. Section 3 presents the data and variables. Section 4 describes the empirical strategy and the results regarding time use and time stress, Section 5 analyzes togetherness in leisure, and Section 6 sets out our conclusions.

2. LITERATURE REVIEW

Economists have long debated the causes and consequences of unemployment. A commonly-held perception of unemployment is that it is a waste of human resources and the most important cause of deprivation in modern societies. In this sense, unemployment is usually interpreted as a sign of market failure that causes some workers to be

involuntarily prevented from working. However, for others unemployment is seen as form of disguised leisure, a period when labor is voluntarily reallocated to more efficient uses. But, in general, researchers consider unemployment affects people in three ways: 1) the loss of production or income, 2) the increase in home production from the additional available time, and 3) the direct impact on individual well-being.

The difference in circumstances and daily activities of the unemployed affect their subjective well-being. Previous research (e.g. Björklund [1985], Clark and Oswald [1994], Winkelmann and Winkelmann [1998]) has found that, in Europe, the unemployed report lower levels of life satisfaction and other indicators of psychological well-being than do the employed. However, although unemployed workers may be deprived of some sources of income, they are not deprived of their time. They still have available 24 hours a day, with the only difference being that they are restricted in allocating their time to activities other than market work. For instance, some unemployed may take advantage of their unemployed period to retrain themselves and improve their marketability and earnings potential, while some may dedicate more time to housework and care of other members of the household.

These considerations regarding the use of time have been considered relevant, both at the macro and the micro level. For instance, regarding national accounting, there have been attempts to improve the welfare measure of a nation by including in the measure of total production some items, such as domestic production (housework, care of children or elderly), health status, and the time that the population spends on leisure. At the micro level, Gronau and Hamermesh [2006] and Ahn et al. [2005] have studied the combination of time and goods to produce utility-enhancing commodities within the household, focusing on the impact of certain demographic characteristics on the relative time intensities of the alternative commodities. More specifically, Ahn et al. [2005] have studied the implications of unemployment with regard to the combination of consumption expenditures and time use within the household.

The advantage of using a time use survey, as is our case, is that we obtain more robust estimates of the time devoted to market work, home production and child care activities (Robinson and Godbey [1997], Bittman and Wajcman [2000]). Robinson and Godbey [1997] contend that time diary information is more reliable than time-estimates, since time estimates are too subjective. In this sense, answers to questions such as "How long do you usually sleep?" do not necessarily conform to times of reported clock hours of

going to bed and getting up. Bittman and Wajcman [2000] contrast two different measures of care time: an estimated average weekly hours question, and diary estimates from the 1997 Australian Time Use Survey. They find that diaries provide information for a more robust estimate. Another major advantage of time diary-based evidence is that time spent on different activities (paid work, unpaid work, personal care and so forth) can be added together to sum to exactly the 1440 minutes of the day.

Additionally, time use surveys allows us to take advantage of the rich contextual information available in these diary accounts, concerning who else was present during an activity, and when or where the activity occurred. Time use surveys also allow us to study the timing of these activities to identify changes in the underlying "time-profiles" of activities throughout the day. It has been found that an individual's time use choices may be contingent on the time use choices of others, since the utility derived from leisure time often benefits from the presence of companionable others (Jenkins and Osberg [2005]). Also, Hamermesh [2000] finds evidence for the USA that couples arrange their work schedules to allow time for leisure that they consume jointly. Furthermore, Halberg [2003] finds a positive effect of coordination on synchronous leisure, and that market work and leisure timing are very intra-household dependent.

Within this framework, in studying, as we do, how individuals change their time use profiles with unemployment, and how this affects the time use profiles of the spouse. Theoretically, economic models of marriage emphasize the "gains from marriage"; namely, that there are sufficient benefits to forming a marriage/partnership that both partners can experience an improvement in well-being upon marriage. This gain can come from gains from specialization or from complementarities. Gains from specialization rely on the existence of certain quantities of requisite household goods (Becker's commodities) that can be produced by either spouse. Thus, we might expect that increased home production time of one spouse would reduce the home production time of the other. If the gains from marriage come from complementarities, such as enjoying spending leisure time together, then we might predict that an increase in the leisure time of one spouse (that could be produced by unemployment) would also increase the leisure time of the other spouse.

Finally, time use studies, and leisure, stress and well-being studies, converge in different ways: time allocation data is used in non-market production evaluation, leisure time is included as a component of quality-of-life indices, questions on perceptions of stress, lack of free time and self-assessed well-being also contribute to an extended analysis

of well-being. Different economic theoretical approaches to stress were surveyed by Hammermesh and Lee [2007] and associated with income level. Using time use data, and assuming that "stress" is "physical, mental or emotional strain or tension", they followed the seminal work on time allocation by Becker [1965], and developed what they called an economic theory of time stress. Time stress should thus be interpreted as strain or tension generated by feelings that the available time is insufficient to accomplish the desired activity. "Time, like goods, is always insufficient — because time is limited, everyone is to some extent stressed" (Becker [1965]). However, although unemployed workers are deprived of some sources of income, they are not deprived of their time.

3. DATA AND VARIABLES

3.1 Data and Sample

We use the Spanish Time Use Survey-STUS (2002-2003), which collects time use information on all household members over 9 years old, allowing us to accurately compute the total effective hours devoted to a variety of activities. Specifically, the survey provides us with results on what individuals of different sex, age, socio-economic level and work status do, and how they distribute their time over a given period, as well as identifying the main gaps in time distribution at family and social levels (education, work, leisure time, among others). The survey also provides sex inequities linked to non-paid work, and generates new quality of life indicators. Thus, the STUS constitutes a major source for the design of public policies in different action fields.

The general sample is restricted to include "non-retired/non-student" couples with both members between 21 and 65, and with at least one of the members in full-time employment.[1] Since a loss of employment may suppose a loss of income, we restrict the couples to include only one unemployed individual, given that situations where both members of the couple are unemployed are not common in the sample years. This results in 3,907 couples for our analysis of how unemployment affects own and couple's time allocation decisions and time stress.

[1] Hamermesh and Lee [2007] focus on how higher earnings contribute to time stress, and restrict their sample to couples with at least one worker.

3.2 Time Use Variables

The first thing to be considered when studying time use categories is that the number of possible activities is large. We need to devise some way to aggregate these activities into useful economic categories, but since aggregation methods are necessarily arbitrary, we use three of the categories used by Burda et al. [2008]: *Market Work*, *Household Production*, and *Leisure*.

The first type of activity is that for which people are paid (*Market Work*), although certain activities engaged in at home, using own time and some purchased goods, are those for which substitutes could be purchased from the market, instead of performing them ourselves (*Household Production*). Such activities have the common characteristic that we could pay someone to perform them for us, and we are not paid for performing them. The other aggregate is *Leisure*, which includes all activities that we cannot pay someone else to do for us, and that we do not really have to do, if we do not wish to. What distinguishes *Leisure* from other types of home activities is that one can function perfectly well, albeit not necessarily happily, with no *Leisure* whatsoever, which is to say *Leisure* is not a survival necessity.

Regarding *Household Production* activities, Hersch and Stratton [2002] find that the effects of household responsibilities on wages differs with the type of activity, and Hersch [2009] divides the time devoted to household production activities into six categories. Similarly, we divide the time devoted to general *Household Production* into 8 categories (excluding childcare): *Cooking*, *Household Maintenance*, *Laundry/Ironing*, *Gardening/Pet Care*, *Repairing*, *Shopping*, *Household Managemen*t and *Adult Care*.[2] Additionally, since Hersch [2009] finds that "daily housework" has negative effects on wages, we define two additional categories: *Routine Housework* and *Sporadic Housework*. In this sense, the former has traditionally been recognized as being female-specific, whereas the latter is traditionally considered to be male-oriented and having a higher consumption component (Hersch and Stratton [2002]). *Routine Housework* includes the time devoted to *Cooking*, *Household Maintenance*, *Laundry/Ironing*, *Shopping* and *Household Managemen*t, while *Sporadic Housework* includes the time devoted to *Gardening/Pet Care*, *Repairing* and *Adult Care*.

[2] Hersch [2009] defines cleaning, laundry and food preparation as "daily housework" and, we allocate these to separate categories.

Childcare poses a conceptual challenge (e.g. Aguiar and Hurst [2007]). It has been argued that childcare differs from *Household Production* in terms of the utility generated. For example, when asked to assess the satisfaction they receive from various activities, individuals consistently rank time spent playing with and reading to their children as being among the most enjoyable (Robinson and Godbey [1997]). Furthermore, individuals consistently report that general childcare is more enjoyable than activities such as housework, grocery shopping, yard work, cleaning, doing dishes and laundry. Such survey evidence suggests that it may be appropriate to examine childcare separately from other categories of time use. For this reason, we also analyze childcare separately (*Childcare*).

However, for the specific analysis of childcare, it is crucial to sort this time into its various categories (Gutierrez-Domenech [2007]), since the degree of human capital enrichment in each activity will have different effects on child outcomes. Such division not only has human capital and behavioral implications for children, but it also divides labor into several opposing categories. Zick et al. [2001] show, for example, that more parental involvement in reading/homework activities decreases behavioral problems and improves the grades of the children. As a result, we also analyze childcare divided into *Basic Childcare* (e.g. feeding, bathing) and *Quality Childcare* (e.g. reading, playing). *Basic Childcare* includes all the activities intended to satisfy the primary necessities of children, such as breastfeeding, feeding, showering… while *Quality Childcare* includes all the activities involved in the development of children's human capital, such as playing with and reading to children.

Finally, we consider the time devoted to *Job Search* and *Study*. The amount of time devoted to searching for a job is of central interest in search theory and an important determinant of unemployment. However, it has rarely been studied, and only Holzer [1987], and Krueger and Mueller [2008a; 2008b] directly analyze the time devoted to searching for a job. Also, unemployment decreases the time devoted to market work and unemployed people may find studying (combined with searching for a job) as a way to reduce the unemployment spells, since studying normally increases human capital.

3.3 Time Pressure

The difference in circumstances and daily activities of the unemployed affect their subjective well-being. Previous research (e.g. Björklund [1985], Clark and Oswald [1994], Winkelmann and Winkelmann [1998]) has found that the unemployed report lower levels

of life satisfaction and other indicators of psychological well-being than do the employed. However, unemployment has the potential to increase the amount of time devoted to free time, and free time has the potential to reduce time pressures. For this reason, we analyze how unemployment changes the perceptions of time pressure for both the unemployed and their partners.

Time stress reflects scarcity of time and. should be interpreted as strain or tension generated by feelings that the available time is insufficient to accomplish the desired activity. To measure the feelings of time stress or time pressure, we use the following question: *"How often do you feel rushed or pressed for time?,"* with the following responses: *Almost Never* (1), *Sometimes* (2), and *Always* (3).[3]

3.4 Commodities within the Household

Following Becker's theory of household production (e.g., Becker [1965]), individual utility depends on commodities which are produced using both consumption goods and time. Hence, the cost of being unemployed should also be computed, looking at how unemployment changes the combination of goods and time used to produce the utility-enhancing commodities. Against this background, we take a household approach, examining how unemployment changes the total time devoted by both members of the couple to produce commodities within the household.[4]

For this reason we analyze, at the household level, the sum of the time devoted by the husband and the wife to produce commodities. We follow the previous classification, and we analyze the effects of unemployment on the total time devoted by the family members to the following categories: *Housework, Routine Housework, Sporadic Housework, Cooking, Household Maintenance, Ironing, Gardening/Pet care, Repairing, Shopping, Household Management, Adult Care, Childcare, Basic Childcare,* and *Quality Childcare.*

[3] Hamermesh and Lee [2007] use a similar question from different datasets, although they have 5 possible responses (*Almost Always*, *Often*, *Sometimes*, *Rarely*, and *Never*). In our case, we have rescaled the categories, so that, we now have higher values corresponding to higher time stress.

[4] Ahn et al. [2005] find that time intense commodities (passive leisure, active leisure, housework and childcare) are produced more in households with unemployed individuals. However, we take a time use approach, since we have no information on expenditures for the sample

3.5 Descriptive Evidence

Individual Time Use and Time Stress

We first analyze the effects of unemployment on time use. Table 1a shows the time devoted to the different activities and feelings of time pressure for men, by own and partner's unemployment status. Columns (1) and (2) show the time devoted to the different time use categories by employed and unemployed men, respectively, while Column (5) shows p-values of the differences between the time devoted by employed and unemployed men to the different time use categories.[5] Table 1a shows that own unemployment has drastic effects on the time use of men. In this sense, unemployed men devote more time to *Childcare* (15.23 more minutes per day), specifically, unemployed men devote more time to *Quality Childcare* (9.64 more minutes per day). Furthermore, unemployed men devote more time to *Housework* than employed men (121.36 more minutes per day), including *Routine Housework* and *Sporadic Housework* (93.30 and 21.71 more minutes per day, respectively). In this sense, unemployed men devote more time than employed men to *Cooking, Household Maintenance, Laundry/Ironing, Gardening/Pet Care, Shopping* and *Adult Care* (26.11, 32.26, 4.06, 18.15, 19.69 and 11.14 more minutes per day, respectively). Also, unemployed men devote more time to *Study* and *Job Search* than employed men (17.04 and 28.15 more minutes per day, respectively), while the former have more *Leisure* (151.70 more minutes per day.)

Columns (3) and (4) in Table 1a show the time devoted to the different categories by men according to the unemployment status of their wives, while Column (6) shows p-values of the differences between the time devoted to the different categories by men whose wives are employed and unemployed. Table 1a shows that unemployment of the partner has remarkable effects on the time use of the individual. In this sense, men with unemployed wives devote less time to *Basic Childcare* and less time to *Housework* than men with employed wives (6.28 and 15.38 fewer minutes per day). Regarding *Housework,* the effect is concentrated on *Routine Housework*, since men with unemployed wives devote less time to *Routine Housework* than men with employed wives (14.31 fewer minutes per day). In this sense, men with unemployed wives devote less time than men with employed wives to *Cooking* and *Laundry/Ironing* (9.58 and 1.25 fewer minutes per day, respectively). Also, men with unemployed wives devote less time than men with employed wives to *Study* and *Job*

[5] A p-value lower than 0.05 means that we reject that both means are equal for a 5 % level of significance.

Search (1.07 and 5.59 fewer minutes per day, respectively), while we find no statistically significant difference in the time devoted to *Leisure*.

Table 1b shows the time devoted to the different activities and feelings of time pressure for women, by own and partner's unemployment status. Columns (1) and (2) show the time devoted to the different categories by employed and unemployed women, respectively, while Column (5) shows p-values of the differences between the time devoted by employed and unemployed women to the different categories.[6] Table 1b shows that own unemployment has drastic effects on the time use of women. In this sense, unemployed women devote more time to *Childcare* (38.96 more minutes per day), increasing the time devoted to both *Basic Childcare* and *Quality Childcare* (30.02 and 8.94 more minutes per day, respectively). Furthermore, unemployed women devote more time to *Housework* than employed men (145.55 more minutes per day), an effect that is concentrated only in *Routine Housework* (127.10 more minutes per day). Thus, unemployed women devote more time than employed women to *Cooking, Household Maintenance, Laundry/Ironing,* and *Shopping* (46.71, 38.73, 15.16 and 25.41 more minutes per day, respectively). Also, unemployed women devote more time to *Study* and *Job Search* than employed women (11.37 and 1.81 more minutes per day, respectively), while the former have more *Leisure* (78.70 more minutes per day).

Columns (3) and (4) in Table 1b show the time devoted to the different categories by women, according to the unemployment status of their husbands, while Column (6) shows p-values of the differences between the time devoted to the different categories by women whose husbands are employed and unemployed. Table 1b shows that unemployment of the partner also has remarkable effects on the time use of the individual. Thus, women with unemployed husbands devote less time to *Childcare* in general, and less time to *Basic Childcare* and *Quality Childcare* in particular, than women with employed husbands (28.67, 21.07 and 7.61 fewer minutes per day, respectively). Also, women with unemployed husbands devote less time to *Housework* in general than do women with employed husbands (29.85 fewer minutes per day). This leads to a decrease in the time devoted to *Cooking* by women with unemployed husbands, compared to women with employed husbands (14.55 fewer minutes per day). Finally, women with unemployed husbands devote almost the same amount of time to *Job Search* (only 0.35 fewer minutes

[6] A p-value lower than 0.05 means that we reject that both means are equal for a 5 % level of significance.

per day), and we find no statistically significant difference in the time devoted to *Leisure*, compared to women with employed husbands

Regarding time stress, we find statistically significant differences in feelings of stress according to own unemployment status, while we find no statistically significant effects of partners' unemployment on own time stress. In this sense, unemployed men report lower levels of time stress than employed men (1.54 vs. 1.65, respectively), and unemployed women report lower levels of time stress than employed women (1.65 vs. 1.89, respectively).

To sum up, we find that unemployment has differential effects by gender. On the one hand, unemployment for men increases the time devoted to *Quality Childcare* by men, while it decreases the time devoted to *Basic Childcare* by women. It also increases the time devoted to *Housework* by men, for both *Routine Housework* and *Sporadic Housework*, while it decreases the time devoted to *Housework* in general by women, and to *Routine Housework* in particular. As a result, while it increases the time devoted to household production activities by men, except *Repairing* and *Household Management*, unemployment only has effects on the time devoted by women to *Cooking* and *Laundry/Ironing*. On the other hand, unemployment for women increases the time devoted to *Childcare* by women, for both *Basic Childcare* and *Quality Childcare*, while it decreases the time devoted to *Childcare,* both *Basic Childcare* and *Quality Childcare*, by men. It also increases the time devoted to *Housework* by women, specifically for *Sporadic Housework*, while it decreases the time devoted to *Housework* in general by men. As a result, while unemployment increases the time devoted to household production activities by women, except for *Repairing*, *Gardening/Pet care* (*Sporadic Housework*) and *Household Management*, it only has effects on the time devoted by women to *Cooking* and *Household Management*.

Additionally, we find differential effects of unemployment by gender on leisure, since the increase in the time devoted to *Leisure* for men is double the increase for women. Despite the greater increase in *Leisure* for men, the decrease in time stress is larger for women, which would be consistent with the idea that women must face a "double burden" or "second shift" (e.g., Hochschild and Machung [1989], Schor [1991], Hochschild [1997]), since women must combine their work and family characteristics, making leisure have differential effects by gender on time pressure (Mattingly and Sayer [2006], Bittman and Wajcman [2000]).

Commodities within the Household

Table 2 shows, at the household level, the total time devoted by both members of the couple to produce time-intense commodities. We show means of the sum of the time devoted by the husband and the wife to produce household commodities, such as *Cooking* or *Childcare*, by employment status of the spouses. Columns (1), (2) and (3) in Table 2 show the total time devoted in the household to produce commodities when there are no unemployed members within the couple, the husband is unemployed, and the wife is unemployed, respectively, while Columns (4) and (5) show the difference and the p-value of the difference of the time devoted to produce commodities within the household when the husband and the wife is unemployed, respectively, compared with couples where there are no unemployed individuals.

First, we find that unemployment in men and women increases the time devoted to *Housework*, although the effects of unemployment are greater for women, since the increase in the time devoted to *Housework* is larger when the wife is unemployed than when the husband is unemployed (122.11 more minutes per day if the husband is unemployed, 241.40 more minutes per day if the wife is unemployed). However, unemployment has differential effects by gender, depending on the kind of *Housework*. While unemployment of the husband increases the time devoted to both *Routine Housework* and *Sporadic Housework* (122.22 and 16.96 more minutes per day, respectively), unemployment of the wife only increases the time devoted to *Routine Housework* (217.66 more minutes per day). These results are consistent with the idea that there is a specialization pattern in household production activities, with women devoting time to activities that need to be done daily, and that are difficult to shift to weekends.

Regarding the kind of activities, we find that unemployment of any member of the couple increases the time devoted to *Cooking, Household Maintenance, Laundry/Ironing* and *Shopping*. Thus, unemployment of the husband increases the time devoted to these activities by 32.13, 34.03, 7.48 and 20.38 minutes per day, respectively, while unemployment of the wife increases the time devoted to these activities by 84.54, 65.95, 31.60 and 33.29 minutes per day, respectively. Unemployment of the husband also increases the time devoted to *Gardening/Pet care* and *Adult Care* by 14.60 and 8.39 minutes per day, respectively.

We also find differential gender effects of unemployment on childcare activities. While unemployment of the husband does not affect the total time devoted to *Childcare*, *Basic Childcare* and *Quality Childcare,* unemployment of the wife increases the total time devoted to *Childcare* (57.03 more minutes per day), for both *Basic Childcare* and *Quality Childcare* (39.23 and 17.77 more minutes per day, respectively).

In summary, we find that unemployment has positive effects on the time devoted to time-intense commodities, as shown by the increase in *Housework*. This result is consistent with Becker's theory (1965), since time-intense commodities are produced more in households with unemployed individuals. However, we find differential effects of unemployment by gender. First, the increase in *Housework* is larger for unemployment of wives than for unemployment of husbands. Unfortunately, we cannot test whether these differences are due to gender differences in productivity, or differences in taste and/or in household production technology. Panels of time use surveys would help to explain the origin of such differences but, to the best of our knowledge, such surveys are not available.

Second, we find a specialization pattern within the household. Women devote time to activities that need to be done daily, and that are difficult to shift to weekends, while men devote time to activities easily shiftable to weekends. As a result, while unemployment of husbands increases the time devoted to both unshiftable and shiftable activities, unemployment of wives increase the time devoted to daily routine activities.

Finally, we find gender differences in the effect of unemployment on childcare activities. Thus, while unemployment of wives increases the time devoted to *Childcare*, for both *Basic Childcare* and *Quality Childcare*, unemployment of husbands does not affect the time devoted to these activities.

4. EMPIRICAL SPECIFICATIONS AND RESULTS

4.1 Individual Time Use

We condition the time allocation decisions on demographics. Thus, we estimate the following equation for each time use category:

$$Y_i = \alpha + \gamma_{Personal} Personal_i + \gamma_{family} Family_i + \beta_1 WorkChar_i + \beta_2 Unmployed_{i(j)} + \gamma_{day} Day_i + \xi_i \quad (1)$$

where Y_i is the time use variable for individual "i"; $Personal_{it}$ is a vector of personal characteristics (age, age squared, university education, secondary education, health status);

$Family_i$ is a vector of family characteristics (number of children 0-1, number of children 2-4, number of children 5-14, paid housekeeper); Day_{it} is a variable scaling the day of the week when the survey took place; $WorkChar_i$ is a vector of variables to control for own work characteristics (public sector, self-employed); $Unemployed_{i(j)}$ is a "dummy" variable to control for whether the individual "i" (spouse "j") is unemployed (1) or not (0). Table 3 shows results of own and crossed coefficients for unemployment, for both men and women[7]

Columns (1) and (4) in Table 3 show that own unemployment has drastic effects on the time use of individuals. For men, being unemployed has a statistically significant correlation with *Childcare* (24.52 more minutes per day) and, specifically, being unemployed has statistically significant correlations with *Basic Childcare* and *Quality Childcare* (11.29 and 13.23 more minutes per day, respectively). Furthermore, being unemployed has a statistically significant correlation with *Housework* (122.38 more minutes per day), including *Routine Housework* and *Sporadic Housework* (97.12 and 19.07 more minutes per day, respectively). Being unemployed has statistically significant correlations with *Cooking, Household Maintenance, Laundry/Ironing, Gardening/Pet Care, Shopping* and *Adult Care* (29.67, 32.96, 4.01, 16.47, 19.17 and 11.44 more minutes per day, respectively). Also, being unemployed has statistically significant correlations with *Study* and *Job Search* (21.63 and 28.49 more minutes per day, respectively), and it has a statistically significant correlation with *Leisure* (139.72 more minutes per day). These correlations are significant at the 5% level.

In the case of women, unemployment has a statistically significant correlation with *Childcare* (30.13 more minutes per day), and also with the time devoted to both *Basic Childcare* and *Quality Childcare* (21.48 and 8.65 more minutes per day, respectively). Furthermore, being unemployed has a statistically significant correlation with *Housework* (142.47 more minutes per day), an effect that is concentrated only in *Routine Housework* (126.51 more minutes per day). In this sense, being unemployed has statistically significant correlations with *Cooking, Household Maintenance, Laundry/Ironing, Gardening/Pet care* and *Shopping* (45.12, 36.05, 14.65, 2.59 and 28.45 more minutes per day, respectively). Also, being unemployed has statistically significant correlations with *Study* and *Job Search* (13.56

[7] We estimate OLS regressions for each time use category, and we obtain robust estimates using the population weights included in the survey. The omitted day variable is Sunday.

and 1.83 more minutes per day, respectively), and also with *Leisure* (92.26 more minutes per day). These correlations are significant at the 5% level.

As a result, we find a reorganization of time use patterns due to unemployment, with people devoting more time to time-intense commodities, including leisure time. However, while unemployment affects the time devoted to both *Routine Housework* and *Sporadic Housework* by men, unemployment only affects the time devoted to female-specific tasks (*Routine Housework*) by women, that is to say, daily routine activities. Additionally, the increase in *Leisure* is greater for men than for women. Unemployment has effects on *Childcare* for both men and women, but while these are concentrated on *Basic Childcare* for women (3/4 of the total variation), they are shared between *Basic Childcare* and *Quality Childcare* for men. Additionally, we find gender differences in *Job Search*, since unemployed men devote 28.49 more minutes per day to *Job Search*, while women devote 1.83 more minutes per day to *Job Search*. We also find differential effects of unemployment by gender on leisure, since the increase in the time devoted to *Leisure* for men is larger than the increase in women.

Columns (2) and (3) in Table 3 show estimates of the effects of partner's unemployment on own time use. In the case of men, an unemployed wife has a negative statistically significant correlation with *Basic Childcare* (7.69 fewer minutes per day). Regarding *Housework,* the effect is concentrated on *Routine Housework*, since an unemployed wife has a negative statistically significant correlation with *Routine Housework* (12.40 fewer minutes per day). In particular, an unemployed wife has negative statistically significant correlations with *Cooking* and *Laundry/Ironing* (8.87 and 1.22 fewer minutes per day, respectively). Also, an unemployed wife has negative statistically significant correlations with *Study* and *Job Search* (7.69 and 6.61 fewer minutes per day, respectively), while it has a non-statistically significant correlation with the amount of *Leisure*.

For women, an unemployed husband has a negative statistically significant correlation with *Childcare* in general, and with *Basic Childcare* in particular (11.49 and 8.31 fewer minutes per day, respectively). Also, an unemployed husband has negative statistically significant correlations with *Cooking* and *Household Management* (13.33 and 0.440 fewer minutes per day, respectively). Finally, an unemployed husband has non-statistically significant correlations with *Study*, *Job Search* and *Leisure*.

In summary, we find that unemployment of the partner affects mainly *Basic Childcare* and *Cooking*, since an unemployed spouse has negative statistically significant correlations with these two activities. Additionally, for men, an unemployed spouse has negative statistically significant correlations with *Routine Housework*, meaning that men with unemployed wives devote less time to female-specific housework activities. Furthermore, the fact that *Basic Childcare* and not *Quality Childcare* decreases with unemployment of the partner means that *Basic Childcare* is less enjoyable than *Quality Childcare*.[8] This is expected, since the degree of human capital enrichment in each activity will have different effects on child outcomes.

4.2 Time Pressure of Couples

We condition feelings of time pressure on demographics. Since we have an ordered variable (1, 2, 3), in such a way that a higher value means stronger feelings of time pressure, we use an ordered logit model (Wooldridge [2002], pp. 504-508). We control for personal characteristics (age, age squared, university education, secondary education, health status), family characteristics (number of children 0-1, number of children 2-4, number of children 5-14, paid housekeeper), own work characteristics (public sector, self-employed) and a "dummy" variable to control for whether the individual "i" (spouse "j") is unemployed (1) or not (0). Additionally, following Hamermesh and Lee [2007], we control for the amount of time devoted to *Leisure* and *Housework*. Table 4 shows results of own and crossed coefficients for unemployment, for both men and women.[9]

Looking at Columns (1) and (4) for the effects of own characteristics on feelings of time pressure, we find that *Leisure* (measured in hours per day) has a negative statistically significant correlation with a feeling of time pressure. In this sense, an extra hour of *Leisure* decreases the probability of reporting feeling stressed, 0.6 and 1 percentage points for men and women, respectively.

---

[8] For example, when asked to assess the satisfaction they receive from various activities, individuals consistently rank time spent playing with and reading to their children as being among the most enjoyable (Robinson and Godbey [1997])

[9] We have calculated the marginal effects of the coefficients, considering being stressed "always or very often" (3) as the reference outcome. As a result, a positive coefficient means a positive correlation with being stressed, while a negative coefficient means the opposite. Hamermesh and Lee [2007] control for the time devoted to market work and housework. However, given that we have unemployed individuals, this means that they devote no time to market work, so we control for time devoted to *Leisure*.

Age has a positive statistically significant correlation with feelings of time pressure, while age squared has a negative statistically significant correlation with feelings of time pressure, for both men and women. Thus, age has an inverted u-shaped effect on time stress, with the maximum reached at the age of 37.5 and 39.58 for men and women, respectively.

University education has a positive statistically significant correlation with feelings of time pressure for men, with university education increasing the probability of reporting being stressed by 2.4 percentage points. However, we find no statistically significant correlations of education on women's time pressure. Additionally, we find that own income has a positive statistically significant correlation with time pressure of women, with an increase in €1000 in wife's income increasing the probability of reporting being time crunched by 1.5 percentage points. These results are consistent with Hamermesh and Lee [2007], since they find that adults in households with higher earnings perceive more time stress for the same amount of time spent in market work and household work. Since education is an indicator of the income received by the individual, men with University education report being more stressed, which is consistent with the idea that men with University education earn more.

Health status has negative statistically significant correlations with feelings of time pressure, for both men and women. The higher the health status of the individual (values 1 and 2), the lower the time stress. A one-unit increase in health status over the 1-to-5 scale increases the probability of reporting being time crunched by 4 and 6.5 percentage points for men and women, respectively.

Furthermore, the presence of children in the household has positive statistically significant correlations with the probability of reporting being time crunched. Additionally, these correlations are greater for women, since an increase in the number of children between 0 and 15 years old has a positive statistically significant correlation with time stress for women, while for men only the presence of children between 2 and 15 years old has a positive, but lower, statistically significant correlation with time stress.

Working in the public sector has a negative statistically significant correlation with the probability of being stressed for men, reducing this probability by 2.1 percentage points.

Finally, unemployment only has statistically significant correlations for women. Own unemployment of women has a statistically significant correlation with feelings of being time stressed, with unemployed women having a 5-percentage-point lower probability of reporting that they are time stressed, than employed women. However, we find no statistically significant effects of own unemployment for men, nor of partner's unemployment on own time stress.

These results are consistent with the idea that women suffer a "double burden" or must face a "second shift", since working women must combine their work and household responsibilities. Once they become unemployed, they increase the time devoted to household production (*Housework* and *Childcare*) and *Leisure*, reducing the stress generated by this double burden. Despite the loss of income, and the negative effects of unemployment regarding individual well-being and happiness, unemployment reduces the time stress of women, which helps to mitigate the negative effects of unemployment. This explains why the negative effects of unemployment are greater for men than for women.

4.3 Commodities within the Household

We condition the time allocation decisions of the family on partners' characteristics, focusing on the effects of unemployment of either of the spouses, and we estimate the following equation for each time use category:

$$Y_n = \alpha + \gamma_1 \text{Personal}_i + \gamma_2 \text{Personal}_j + \gamma_3 \text{Family}_n + \beta_1 \text{WorkChar}_i + \beta_2 \text{WorkChar}_j + \xi_i \quad (1)$$

where we control for personal characteristics (age, age squared, university education, secondary education, health status) of both members of the couple, γ_1, γ_2, family characteristics (number of children 0-1, number of children 2-4, number of children 5-14, paid housekeeper), γ_3, and work characteristics (public sector, self-employed, unemployment) of both members of the couple, β_1, β_2.[10]

Table 5 shows the estimated effects of unemployment on the time devoted within the household to produce each commodity. We first focus on the effect of unemployment

[10] We estimate OLS regressions for each time use category, and we obtain robust estimates using the population weights included in the survey. We also control for the day of the week of each spouse (although they are supposed to fill out the time use questionnaire on the same day) and the omitted day variable is Sunday.

of men on the time devoted to produce commodities. We find positive statistically significant correlations of unemployment of men on the time devoted to *Housework* (94.55 more minutes per day). This effect is mainly concentrated on *Routine Housework* rather than on *Sporadic Housework* (78.21 vs. 14.77 more minutes per day, respectively). These positive effects are mainly concentrated on *Cooking*, *Household Maintenance* and *Shopping* (23.41, 27.39 and 15.45 more minutes per day, respectively). Other activities that can be shifted to the weekends or holidays, such as *Gardening/Pet* care, are less influenced by unemployment of the husband (12.68 more minutes per day). Regarding the time devoted to produce the childcare commodity, we find a positive statistically significant correlation between the unemployment of the husband and *Childcare* (20.70 more minutes per day), with this correlation also being statistically significant with *Quality Childcare* (10.19 more minutes per day). Additionally, we find a positive significant correlation between unemployment of the husband and the time devoted to *Adult Care* (7.90 more minutes per day).

Regarding unemployment of wives, we first find a positive statistically significant correlation with *Housework* (126.23 more minutes per day), with this correlation being mainly concentrated on *Routine Housework* (111.77 more minutes per day). As a result, we find positive statistically significant correlations between unemployment of the wife and female-specific activities, such as *Cooking*, *Household Maintenance*, *Ironing* and *Shopping* (41.63, 33.74, 20.09 and 15.11 more minutes per day, respectively). Finally, we find a positive statistically significant correlation between the unemployment of the wife and *Childcare* (30.49 more minutes per day), with this effect being concentrated on *Basic Childcare* rather than on *Quality Childcare* (19.53 vs. 10.95 more minutes per day).

To sum up, we find that time-intensive commodities such as *Routine Housework*, which includes *Cooking, Household Maintenance, Laundry/Ironing*, and *Shopping*, and (*Basic* and *Quality) Childcare* are produced more in households with unemployed individuals. These results are consistent with Ahn et al [2005], and also with Becker's theory of household production (Becker [1965]), indicating that the cost of unemployment derived from the loss of income is smaller, thanks to valuable non-market commodities that can be produced with the additional available time.

Additionally, we find differential effects of unemployment by gender. The increase in the production of time-intensive commodities is greater with unemployment of the wife, given that we find a greater increase in the time devoted to household production activities if the wife is unemployed rather than if the husband is unemployed. This supports one of

our previous results, since the increase in leisure time with unemployment is greater for men than for women.

5. TOGETHERNESS AND LEISURE WITH OTHERS

Economic models of marriage emphasize the "gains from marriage"; namely, that there are sufficient benefits to forming a marriage/partnership that both partners can experience an improvement in well-being upon marriage. This gain can come from specialization or from complementarities. If the gains from marriage come from complementarities, such as enjoying spending leisure time with one's spouse, then we might predict that an increase in the leisure time of one spouse would also increase the leisure time of the other spouse. However, we find no evidence of changes in the amount of leisure for the spouses of the unemployed.

Furthermore, Hamermesh [2000], Halberg [2003] and Jenkins and Osberg [2005] find evidence of a desire for simultaneous leisure, in the sense that leisure with other people present may be more desirable that leisure alone. For this reason, given that unemployment increases the total amount of time devoted to leisure by the unemployed individual, and since unemployment can be thought to create greater flexibility in how they allocate their time (they do not have to keep to a working schedule), we now focus on how unemployment changes the simultaneity of leisure between the spouses. The greater flexibility in fulfilling the 24-hours constraint, and the increase in the amount of time devoted to leisure, for both men and women, may lead to a greater amount of joint leisure, increasing the leisure quality of the individuals.

We take advantage of the rich contextual information available in the STUS, such as who else was present during an activity, and when or where the activity occurred, to analyze how joint leisure changes with unemployment. We first take a timing approach, by considering when the leisure activity was done and whether the partner was also devoting time to leisure activity. As a result, we consider whether both members of the couple were simultaneously devoting time to leisure activity in each of the 10-minutes slots included in the survey.[11] In this sense, we compute all the time devoted to leisure by the individual

[11] The instrument of the survey is an activities diary, which all members of the household 10 years old and over complete on a selected day (the same day for all members of the household). The diaries time frame is 24 consecutive hours (from 6:00 a.m until 6:00 a.m the following day) and is divided into 10 minute intervals. In each of the intervals, the respondent records a main activity and a secondary activity (carried out

when the other spouse was also devoting time to leisure activity (*Synchronous Leisure*). However, given that we find a positive effect of own unemployment on own leisure, it could be the case that any increase in synchronous leisure is covered by the increase in total leisure and, for this reason, we calculate the percentage of synchronous leisure, defined as the total amount of synchronous leisure divided by the total amount of leisure (*Percentage of Synchronous Leisure*).

Second, we use the information on whether any family member (excluding children under 10) are present during the activity. In the time use questionnaire, apart from the primary (main) activity and secondary activity, individuals report whether any member of the family was present. We use this information to compute the total time devoted to leisure with other members of the family present (*Leisure with Others*). As with the *Synchronous Leisure* variable, we calculate the percentage of leisure with others, defined as the total amount of leisure with others divided by the total amount of leisure (*Percentage Leisure with Others*).

5.1 Descriptive Evidence

Panels 1 and 2 in Table 6 show the percentage of synchronous leisure and leisure with others for men and women, respectively, by own and partner's unemployment status. Columns (1) and (2) in panel 1 show the percentage of synchronous leisure and leisure with others for employed and unemployed men, respectively, while Column (5) shows p-values of the differences between the percentage of synchronous leisure and leisure with others for employed and unemployed men. We find that unemployed men, compared to employed men, have a lower percentage of synchronous leisure (46.9% vs 40.3%, respectively) and also a lower percentage of leisure with others (62.2% vs 50.5%, respectively). Unemployment negatively affects the proportion of leisure done synchronously with the spouse, or in the presence of others, reducing the quality of leisure for unemployed men.

Columns (3) and (4) in panel 1 show the percentage of synchronous leisure and leisure with others for men, according to the unemployment status of their wives, while Column (6) shows p-values of the differences between the percentage of synchronous

simultaneously with the primary activity), whether the activity was performed in the company of a child under 10 years old, another member of the household or another adult, and the location where the activity took place

leisure and leisure with others for men whose wives are employed and unemployed. We find that men with unemployed wives, compared to men with employed wives, have a larger percentage of synchronous leisure (53% vs 46.3%, respectively) and also a larger percentage of leisure with others (67.9% vs 61.4%, respectively). Partners' unemployment affects positively the proportion of leisure done synchronously with the spouse, or in the presence of others, increasing the quality of their leisure.

Columns (1) and (2) in panel 2 show the percentage of synchronous leisure and leisure with others for employed and unemployed women, respectively, while Column (5) shows p-values of the differences between the percentage of synchronous leisure and leisure with others for employed and unemployed women. We find that unemployed women, compared to employed women, have a lower percentage of synchronous leisure (50.4% vs 54.7%, respectively), and we find no differences in the proportion of leisure done with others. In this sense, unemployment affects negatively the proportion of leisure done synchronously with the spouse, reducing the quality of leisure for unemployed women.

Columns (3) and (4) in panel 2 show the percentage of synchronous leisure and leisure with others for women according to the unemployment status of their husbands, while Column (6) shows p-values of the differences between the percentage of synchronous leisure and leisure with others for women whose husbands are employed and unemployed. In this case, we find no statistically significant differences in the percentage of synchronous leisure and leisure with others for women according to the unemployment status of their husbands. Husbands' unemployment does not affect the proportion of leisure done synchronously with the spouse or in the presence of others.

Summarizing, we find statistically significant negative effects of own unemployment on the proportion of synchronous leisure for both men and women, and a statistically significant negative effect of own unemployment on the proportion of leisure with others, for men. As a result, it could be that unemployment reduces the quality of leisure. However, given the general increase in leisure generated by unemployment, it could be the case that the increase in leisure is greater than the increase in synchronous leisure or leisure with others, and the decrease in these percentages is due only to the increase in the total time devoted to leisure. For this reason, we analyze the effects of partners' unemployment on these percentages, and we find that while unemployment in wives

increases the quality of leisure for men, unemployment in husbands does not change the quality of the wives' leisure.

5.2 Empirical Results

For the analysis controlling for demographics we report weighted Tobit marginal effects. A Tobit specification is preferable, given that the percentages of synchronous leisure and leisure with others are truncated at value one and zero (double tobit model). We control for personal characteristics (age, age squared, university education, secondary education, health status) of both members of the couple, family characteristics (number of children 0-1, number of children 2-4, number of children 5-14, paid housekeeper), work characteristics (public sector, self-employed) of both members of the couple, and the unemployment status of the individuals.[12] Table 7 shows coefficients of own and spouse's unemployment status on individual's ratios of synchronous leisure and leisure with others.

Regarding synchronous leisure, we find that own unemployment has no any statistically significant correlation with the proportion of synchronous leisure of the individuals. As a result, own unemployment does not increase the proportion of leisure done synchronously with the spouse. For the case of crossed effects, we find that unemployment of the spouse has a positive statistically significant correlation with the proportion of synchronous leisure for the husband (8.2 percentage points higher), while it has no statistically significant correlations with the proportion of synchronous leisure for the wife. Unemployment of women affects the synchronous leisure of their husbands, thus increasing the proportion of synchronous leisure.

Regarding leisure with others, we find that own unemployment has negative statistically significant correlations with the proportion of leisure with others of the individuals. However, this effect may be due to the increase in leisure generated by own unemployment, and the increase in leisure exceeds the increase in leisure with others. For this reason, and given that partner's unemployment has no statistically significant effect on leisure of the reference individual, we analyze the effects of spouses' unemployment on the proportion of leisure with others (crossed effects). We find that unemployment of the spouse has a positive statistically significant correlation with the proportion of leisure with

[12] Since we regress individual ratios of synchronous leisure and leisure with others, in each regression we control for own unemployment status or spouse's unemployment status, since we select couples where at least one of the members is working full-time.

others for the husband (10.06 percentage points higher), while it has no statistically significant correlations with the proportion of leisure with others for the wife. Unemployment of women affects the proportion of leisure with others of their husbands, thus increasing this proportion.

To sum up, we find that own unemployment does not increase, nor does the proportion of synchronous leisure or leisure with others. However, this effect may be due to the increase in leisure generated by own unemployment. For this reason, and given that partner's unemployment has no statistically significant effect on leisure of the reference individual, we analyze the effects of spouses' unemployment on the proportion of synchronous leisure and leisure with others, finding that unemployment of the wife increases the proportion of synchronous leisure and leisure with others of the husband, while unemployment of the husband has no statistically significant effect on the proportion of synchronous leisure and leisure with others of the husband. Combining these two results, we conclude that while unemployed wives seem to desire more synchronous leisure with their husbands, husbands do not.

6. CONCLUSIONS

Unemployment will be a major problem in the coming years, and studying the effects of unemployment at individual and household level is important for these reasons: i) the loss of production or income, ii) the increase in home production from the additional available time, and iii) the direct impact of unemployment on individual well-being.

In this paper, we have used the Spanish Time Use Survey (STUS) 2002-2003, to first focus on the effects of unemployment on own and partner's uses of time, and on the total time devoted to time-intensive commodities (cooking, ironing…) within the couple. Depending on whether there are gains from specialization or gains from complementarities, we should find different effects of unemployment on partner's and household's uses of time.

Secondly, unemployment has been found to have negative consequences on individual well-being and happiness. However, although unemployed workers may be deprived of some sources of income, they are not deprived of their time, since they still have 24 hours a day, with the only difference being that they are limited to allocating their time in activities other than market work. For this reason, we have analyzed whether

unemployment has negative consequences on the perceptions of both unemployed and partner's time stress.

And, thirdly, economic models of marriage emphasize the "gains from marriage", which can come from specialization or from complementarities. Gains from specialization rely on the existence of certain requisite household goods (Becker's commodities) that can be produced either by the husband or the wife. If the gains from marriage come from complementarities, such as enjoying spending leisure time with one's spouse, then we might predict that an increase in the leisure time of one spouse (that could be produced by unemployment) would also increase the leisure time of the other spouse. Hamermesh [2000], Halberg [2003] and Jenkins and Osberg [2005] find evidence of this desire for simultaneous leisure. For this reason, we have focused on whether there are gains from complementarities, analyzing how unemployment affects simultaneous leisure.

Our results first show that own unemployment increases the time devoted to childcare and housework activities, and we find differential gender crossed effects, since unemployment in men does not affect the time devoted to childcare by women, and unemployment in women does not affect the time devoted to housework by men. At the household level, we find that couples with unemployed individuals devote more time to housework and childcare activities, consistent with Becker's theories of household production, since time intensive commodities are produced more in households with unemployed individuals. Second, unemployment does not affect the time stress of men, while unemployed women report lower levels of time stress, consistent with the economic literature arguing that working women face a "double burden" or "second shift". Third, we find that while unemployed wives seem to desire more synchronous leisure with their husbands, husbands do not.

Additionally, we have shown that unemployed individuals devote their excess of non labor time to leisure and domestic work, and increased, but to a lesser extent, the time intensity of the production of commodities associated with child care in the case of unemployed wives. We are aware that our estimated differences in the allocations of consumption expenditures and time between unemployed and employed cannot be interpreted as a causal effect of unemployment, particularly in the case of women. Nevertheless, our results provide relevant evidence for the measurement of home production, and, eventually, for the measurement of the costs of unemployment from the perspective of the theory of home production.

Finally, we have found that time-use decisions of individuals are contingent on the time use choices of others, especially at the household level. Despite Becker's theory on household production helping to explain that time-intensive commodities are produced more in households with unemployed individuals, such models potentially miss a vital part of the behavior of the household, and overlook the timing aspect of time-use.

We conclude that individuals' use of time should not, in general, be summarized over a long period of time, and then studied as an aggregate. The finding, through togetherness in leisure, that timing is essential for individual behavior, implies that a comprehensive micro-economic model of time-use should incorporate this dimension or, at least, test whether the timing mechanism is of importance.

REFERENCES

Aguiar, M. and E. Hurst (2007), "Measuring trends in Leisure: The allocation of time over five decades," *Quarterly Journal of Economics*, August, 969-1006.

Ahn, N., J. F. Jimeno and A. Ugidos (2005). "Mondays in the sun: Unemployment, time use and consumption patterns in Spain," in *The Economics of Time Use*, eds. Daniel Hamermesh and Gerard Pfann, Amsterdam: Elsevier.

Becker, G. (1965). "A Theory of the Allocation of Time," *The Economic Journal*, 75, 493-517.

Bittman, M., and J. Wajcman (2000), "The rush hour : The character of leisure time and gender equity," *Social Forces*, 79(1), 165-189.

Björklund, A. (1985). "Unemployment and Mental Health: Some Evidence from Panel Data." *Journal of Human Resources,* 20(4): 469-483.

Burda, M., D. Hamermesh and P. Weil (2008), "The Distribution of Total Work in the Us and EU" in *Are Europeans Lazy or Americans Crazy?* (Oxford university Press).

Bureau of Labor Statistics (2009), Economic News Releases, January 2009.

Clark, A., and A. Oswald (1994). "Unhappiness and Unemployment." *The Economic Journal*, 104(424), 648-659.

Gronau, R., and D. Hamermesh (2006). "Time vs. Goods: The Value of Measuring Household Production Technologies," *Review of Income and Wealth*, 52(1), 1-16.

Gutierrez-Domenech, M. (2007), "Parental Employment and Time with Children," *La Caixa Working Paper Series N 01/2007*.

Halberg, D. (2003). "Synchronous Leisure, Jointness, and Household Labor Supply," *Labour Economics*, 10, 185-202.

Hamermesh, D. (2000). "Togetherness: Spouses' Synchronous Leisure and the Impact of Children," *NBER Working Paper W7455*.

Hamermesh, D. and J. Lee (2007). "Stressed Out in Four Continents: Time Crunch or Yuppie Kvetch," *Review of Economics and Statistics*, 89(2), 374-383.

Hersch, J. and L. Stratton (2002). "Housework and wages," *Journal of Human Resources*, 37(1), 218-229.

Hersch, J. (2009). "Home Production and Wages: Evidence from the American Time Use Survey," *Review of Economics of the Household*, forthcoming.

Holzer, H. (1987). "Job Search by Employed and Unemployed Youth," *Industrial and Labor Relations Review*, 40(4), 601-611.

Hoschchild, A.R., and A. Machung (1989). *The Second Schift: Working Parents and the Revolution at Home* (New York: Viking).

Hochschild, A.R. (1997). *The Time Bind: When Work Becomes Home and Home Becomes Work* (Henry Holt and Company, New York).

Jenkins, S. and L. Osberg (2005). "Nobody to Play with? The Implicatons of Leisure Coordination," in *The Economics of Time Use*, eds. Daniel Hamermesh and Gerard Pfann, Amsterdam: Elsevier.

Kalenkoski, C., D. Ribar and L. Stratton (2005). "Parental Child-Care in Single-Parent, Cohabiting and Married-Couple Families: Time-Diary Evidence for the United Kingdom," *American Economic Review,* 95(2), 194-198.

Krueger, A. and A. Mueller (2008a). "The Lot of the Unemployed: A Time Use Perspective," *IZA Discussion Paper N 3490*.

Krueger, A. and A. Mueller (2008b). "Job Search and Unemployment Insurance: New Evidence from Time Use Data," *IZA Discussion Paper N 3667*.

Mattingly, M. J. and L. C Sayer (2006). "Under Pressure: Gender Differences in the Relationship Between Free Time and Feeling Rushed," *Journal of Marriage and Family*, 68(1), 205-221.

Robinson, J.P. and G. Godbey (1997), *Time for Life: The Surprising Ways Americans Use their Time* (University Park, Pennsylvania: The Pennsylvania State University Press).

Schor, J. (1991). *The Overworked American: The Unexpected Decline of Leisure* (New York: BasicBooks).

Winkelmann, L. and R. Winkelmann (1998). "Why Are the Unemployed So Unhappy? Evidence from Panel Data." *Economica*, 65(257), 1–15.

Wooldridge, J.M. (2002). *Econometric Analysis of cross section and panel data* (The MIT Press).

Zick, C., W. K. Bryant and E. Österbacka (2001), "Mothers' Employment, Parental Involvement, and the Implications for Intermediate Child Outcomes," Social Science Research, 30, 25-49.

Table 1a. Sum Stats, Men by own and partner's unemployment status[1,2,3]

	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	**Unemployed**	**Employed Wife**	**Unemployed Wife**	**Difference Employed-Unemployed**	**Difference Employed wife-Unemployed wife**
Market Work	421.342	-	406.878	415.504	-	-8.63 (0.65)
	(4.665)	-	(4.833)	(18.291)		
Childcare	26.449	41.676	27.346	21.998	-15.23 (0.03)	5.35 (0.08)
	(0.996)	(7.117)	(1.046)	(2.875)		
Basic Childcare	14.846	20.436	15.468	9.186	-5.59 (0.23)	6.28 (0.00)
	(0.668)	(4.594)	(0.702)	(1.652)		
Quality Childcare	11.603	21.240	11.878	12.812	-9.64 (0.02)	-0.93 (0.66)
	(0.550)	(4.055)	(0.571)	(2.080)		
Home Production	96.013	217.376	101.312	85.937	-121.36 (0.00)	15.38 (0.03)
	(1.833)	(14.816)	(1.951)	(6.975)		
Routine Housework	73.802	167.099	78.044	63.732	-93.30 (0.00)	14.31 (0.03)
	(1.512)	(12.910)	(1.613)	(5.789)		
Sporadic Housework	14.923	36.630	15.804	14.033	-21.71 (0.00)	1.77 (0.54)
	(0.826)	(6.838)	(0.872)	(2.772)		
Cooking	27.425	53.539	28.991	19.409	-26.11 (0.00)	9.58 (0.00)
	(0.601)	(5.239)	(0.641)	(2.033)		
Household Maintenance	17.849	50.209	19.058	17.973	-32.36 (0.00)	1.08 (0.69)
	(0.659)	(5.827)	(0.700)	(2.585)		
Laundy/Ironing	1.260	5.319	1.487	0.236	-4.06 (0.03)	1.25 (0.00)
	(0.128)	(1.850)	(0.149)	(0.148)		
Gardening, pet care	8.985	27.135	9.749	7.866	-18.15 (0.00)	1.88 (0.34)
	(0.566)	(6.240)	(0.618)	(1.875)		
Repairing	5.938	9.495	6.056	6.166	-3.56 (0.20)	-0.11 (0.96)
	(0.589)	(2.686)	(0.601)	(1.965)		
Shopping	23.194	42.880	23.989	22.443	-19.69 (0.00)	1.55 (0.62)
	(0.836)	(5.437)	(0.864)	(3.038)		
Household Management	0.974	0.912	0.954	1.204	0.06 (0.92)	-0.25 (0.77)
	(0.172)	(0.562)	(0.168)	(0.848)		
Adult Care	3.099	14.240	3.564	2.467	-11.14 (0.01)	1.10 (0.41)
	(0.387)	(4.078)	(0.420)	(1.275)		
Job Search	0.009	28.158	1.069	0.000	-28.15 (0.00)	1.07 (0.00)
	(0.009)	(7.844)	(0.311)	(0.000)		
Study	8.180	25.222	9.157	3.566	-17.04 (0.02)	5.59 (0.00)
	(0.589)	(7.445)	(0.667)	(1.284)		
Leisure	248.673	400.370	253.717	257.796	-151.70 (0.00)	-4.08 (0.74)
	(2.906)	(15.950)	(2.983)	(11.916)		
Time Stress	1.646	1.540	1.643	1.638	0.11 (0.05)	0.00 (0.91)
	(0.011)	(0.052)	(0.012)	(0.040)		
N Observations	3,786	144	3,673	257		

Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] P-value of the difference, obtained with a t-test of the samples, in brackets.

Table 1b. Sum Stats, Women by own and partner's unemployment status[1,2,3]

	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	**Unemployed**	**Employed Husband**	**Unemployed Husband**	**Difference Employed-Unemployed**	**Difference Employed husb.-Unemployed husb.**
Market Work	321.070	-	282.147	356.152	-	-74.01 (0.01)
	(4.291)	-	(4.207)	(29.171)		
Childcare	44.915	83.880	50.100	21.425	-38.96 (0.00)	28.67 (0.00)
	(1.398)	(5.628)	(1.443)	(5.631)		
Basic Childcare	32.522	62.544	36.501	15.434	-30.02 (0.00)	21.07 (0.00)
	(1.091)	(4.748)	(1.147)	(4.735)		
Quality Childcare	12.393	21.336	13.599	5.992	-8.94 (0.00)	7.61 (0.00)
	(0.600)	(2.073)	(0.594)	(2.226)		
Home Production	227.683	373.236	245.857	216.007	-145.55 (0.00)	29.85 (0.05)
	(2.324)	(7.089)	(2.385)	(15.081)		
Routine Housework	214.426	341.521	230.159	212.917	-127.10 (0.00)	17.24 (0.30)
	(2.256)	(6.919)	(2.291)	(16.403)		
Sporadic Housework	5.394	7.456	5.610	7.878	-2.06 (0.14)	-2.27 (0.42)
	(0.428)	(1.321)	(0.413)	(2.802)		
Cooking	89.455	136.160	95.364	80.814	-46.71 (0.00)	14.55 (0.04)
	(1.071)	(3.444)	(1.072)	(7.147)		
Household Maintenance	59.764	98.497	64.421	68.079	-38.73 (0.00)	-3.66 (0.67)
	(1.006)	(3.421)	(1.008)	(8.568)		
Laundy/Ironing	25.279	40.439	27.059	31.224	-15.16 (0.00)	-4.16 (0.50)
	(0.700)	(2.425)	(0.692)	(6.117)		
Gardening, pet care	3.970	6.179	4.212	5.936	-2.21 (0.07)	-1.72 (0.50)
	(0.323)	(1.186)	(0.321)	(2.512)		
Repairing	1.424	1.277	1.398	1.941	0.15 (0.82)	-0.54 (0.71)
	(0.277)	(0.575)	(0.256)	(1.416)		
Shopping	37.415	62.824	40.655	31.086	-25.41 (0.00)	9.57 (0.12)
	(1.045)	(3.354)	(1.026)	(6.097)		
Household Management	0.544	1.691	0.694	0.000	-1.15 (0.32)	0.69 (0.00)
	(0.118)	(1.148)	(0.177)	(0.000)		
Adult Care	1.969	1.910	1.966	1.714	0.06 (0.92)	0.25 (0.88)
	(0.256)	(0.545)	(0.236)	(1.702)		
Job Search	0.123	1.932	0.348	0.000	-1.81 (0.02)	0.35 (0.00)
	(0.072)	(0.778)	(0.116)	(0.000)		
Study	6.069	17.443	7.513	3.694	-11.37 (0.00)	3.82 (0.17)
	(0.593)	(3.190)	(0.661)	(2.729)		
Leisure	207.574	286.275	217.296	207.952	-78.7 (0.00)	9.34 (0.63)
	(2.596)	(6.880)	(2.489)	(19.369)		
Time Stress	1.868	1.645	1.840	1.893	0.22 (0.00)	-0.05 (0.54)
	(0.012)	(0.029)	(0.011)	(0.085)		
N Observations	3,466	464	3,866	64		

Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] P-value of the difference, obtained with a t-test of the samples, in brackets.

Table 2. Sum Stats, time devoted to produce commodities within the household[1,2,3]

	(1)	(2)	(3)	(4)	(5)
	No Unemployed Spouse	**Husband Unemployed**	**Wife Unemployed**	**p-value Husband Unemployed**	**p-value Wife Unemployed**
Home Production	209.499	331.608	450.896	122.11 (0.00)	241.40 (0.00)
	(3.871)	(18.602)	(11.753)		
Routine Housework	178.890	281.110	396.553	122.22 (0.00)	217.66 (0.00)
	(3.396)	(16.050)	(10.633)		
Sporadic Housework	18.952	35.910	21.153	16.96 (0.02)	2.20 (0.58)
	(1.216)	(7.039)	(3.743)		
Cooking	69.821	101.954	154.359	32.13 (0.00)	84.54 (0.00)
	(1.375)	(6.057)	(5.605)		
Household Maintenance	47.682	81.710	113.631	34.03 (0.00)	65.95 (0.00)
	(1.344)	(8.412)	(6.107)		
Laundy/Ironing	12.935	20.417	44.537	7.48 (0.04)	31.60 (0.00)
	(0.589)	(3.511)	(3.882)		
Gardening, pet care	11.447	26.045	14.365	14.60 (0.00)	2.92 (0.36)
	(0.825)	(6.222)	(3.053)		
Repairing	7.505	9.865	6.789	2.36 (0.47)	-0.72 (0.74)
	(0.892)	(3.128)	(2.013)		
Shopping	43.376	63.751	76.665	20.38 (0.01)	33.29 (0.00)
	(1.624)	(7.564)	(5.814)		
Household Management	1.144	0.951	2.266	-0.19 (0.72)	1.12 (0.38)
	(0.248)	(0.480)	(1.248)		
Adult Care	3.933	12.327	5.094	8.39 (0.02)	1.16 (0.50)
	(0.426)	(3.521)	(1.648)		
Childcare	46.177	61.163	103.174	14.99 (0.26)	57.03 (0.00)
	(1.851)	(13.151)	(9.973)		
Basic Childcare	29.607	36.534	68.838	6.93 (0.48)	39.23 (0.00)
	(1.352)	(9.776)	(7.374)		
Quality Childcare	16.570	24.629	34.335	8.06 (0.11)	17.77 (0.00)
	(0.830)	(4.902)	(4.457)		
N Observations	3,529	144	257		

Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] P-value of the difference, obtained with a t-test of the samples, in brackets.

Table 3. Time use categories, direct and crossed effects of unemployment [1,2,3,4]

	(1)	(2)	(3)	(4)
	Husband		Wife	
	Husband Unemployed	Wife Unemployed	Husband Unemployed	Wife Unemployed
Market Work	-	-4.750	42.921	-
	-	(15.342)	(23.273)	-
Childcare	24.524**	-6.613*	-11.496**	30.128**
	(6.091)	(2.725)	(3.743)	(3.908)
Basic Childcare	11.294**	-7.691**	-8.307*	21.480**
	(4.119)	(1.676)	(3.257)	(3.234)
Quality Childcare	13.230**	1.078	-3.189	8.649**
	(3.724)	(2.044)	(2.209)	(2.034)
Home Production	122.380**	-12.934	-25.145	142.465**
	(15.800)	(7.003)	(13.166)	(7.364)
Routine Housework	97.123**	-12.396*	-15.339	126.504**
	(13.639)	(5.794)	(13.946)	(7.311)
Sporadic Housework	19.067**	-1.514	1.874	2.252
	(6.828)	(2.954)	(2.852)	(1.457)
Cooking	29.689**	-8.870**	-13.333*	45.120**
	(5.417)	(2.063)	(6.304)	(3.608)
Household Maintenance	32.956**	-0.668	4.337	36.046**
	(5.984)	(2.614)	(8.200)	(3.687)
Laundy/Ironing	4.008*	-1.220**	3.614	14.648**
	(1.854)	(0.235)	(5.808)	(2.562)
Gardening, pet care	16.466**	-1.275	1.576	2.586*
	(6.162)	(2.014)	(2.518)	(1.281)
Repairing	2.601	-0.238	0.299	-0.335
	(2.819)	(2.110)	(1.472)	(0.691)
Shopping	19.172**	-1.254	-9.290	28.446**
	(5.646)	(3.175)	(5.981)	(3.546)
Household Management	-0.138	0.306	-0.440**	1.416
	(0.624)	(0.896)	(0.134)	(1.171)
Adult Care	11.436**	-0.689	-0.226	0.828
	(4.068)	(1.342)	(1.654)	(0.594)
Job Search	28.494**	-6.613*	-0.129	1.827*
	(7.964)	(2.725)	(0.083)	(0.788)
Study	21.633**	-7.691**	-1.827	13.559**
	(7.455)	(1.676)	(2.937)	(3.265)
Leisure	139.724**	12.526	-5.035	92.255**
	(15.769)	(10.717)	(17.753)	(7.242)
N Observations	3,930	3,930	3,930	3,930

*Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level [4] Regressions include age (and squared), university education, secondary education, working in the public sector, working self-employed, the household has domestic service, number of children 0-1, number of children 2-4, number of children 5-13, health status and day of the week dummies (ref: Sunday).*

Table 4. Time pressure, by own and partner's unemployment status [1,2,3]

	Husband		Wife	
	Husband Unemployed	**Wife Unemployed**	**Husband Unemployed**	**Wife Unemployed**
Leisure	-0.006**	-0.006**	-0.010**	-0.010**
	(0.001)	(0.001)	(0.002)	(0.002)
Housework	-0.001	-0.001	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Age	0.006*	0.007*	0.021**	0.019**
	(0.003)	(0.003)	(0.005)	(0.005)
Age Squared	-0.008*	-0.009*	-0.027**	-0.024**
	(0.004)	(0.004)	(0.006)	(0.006)
University Education	0.024*	0.023*	0.001	-0.001
	(0.010)	(0.010)	(0.014)	(0.012)
Secondary Education	0.015	0.014	0.017	0.011
	(0.008)	(0.009)	(0.014)	(0.012)
Wife'sIncome	0.003	0.005	0.017*	0.015*
	(0.004)	(0.005)	(0.008)	(0.008)
husband's Income	0.002	0.001	-0.012	-0.010
	(0.004)	(0.004)	(0.007)	(0.006)
Health	0.040**	0.041**	0.064**	0.063**
	(0.005)	(0.005)	(0.008)	(0.007)
Number Children 0-1	0.010	0.012	0.038*	0.049**
	(0.011)	(0.011)	(0.019)	(0.016)
Number Children 2-4	0.021**	0.024**	0.020	0.022*
	(0.008)	(0.008)	(0.013)	(0.011)
Number Children 5-12	0.010*	0.010*	0.030**	0.029**
	(0.004)	(0.005)	(0.007)	(0.006)
Housekeeper	0.035**	0.014	0.039**	0.036**
	(0.010)	(0.014)	(0.014)	(0.014)
Working Public Sector	-0.021**	-0.021**	-0.008	-0.008
	(0.007)	(0.007)	(0.013)	(0.012)
Self-Employed	0.007	0.007	0.002	0.001
	(0.010)	(0.010)	(0.017)	(0.016)
Unemployed	-0.006	0.013	0.016	-0.050**
	(0.016)	(0.014)	(0.037)	(0.013)
Observations	3930	3930	3930	3930

*Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level*

Table 5. Time to produce commodities within the household, effects of unemployment [1,2,3,4]

	Husband Unemployed	*Wife Unemployed*	*Observations*	*R-squared*
Housework	94.546**	126.229**	3,930	0.41
	(18.449)	(13.094)		
Routine Housework	78.207**	111.774**	3,930	0.43
	(15.948)	(11.633)		
Sporadic Housework	14.768*	-0.249	3,930	0.03
	(7.065)	(4.269)		
Cooking	23.414**	41.633**	3,930	0.40
	(6.168)	(5.940)		
Household Mainten.	27.394**	33.739**	3,930	0.24
	(8.070)	(6.486)		
Ironing	4.361	20.086**	3,930	0.17
	(3.403)	(3.905)		
Gardening, pet care	12.684*	1.004	3,930	0.03
	(6.218)	(3.347)		
Repairing	2.084	-1.252	3,930	0.01
	(3.287)	(2.478)		
Shopping	15.445*	15.111*	3,930	0.14
	(7.590)	(6.248)		
Household Managem.	-0.302	0.905	3,930	0.01
	(0.588)	(1.246)		
Adult Care	7.895*	0.298	3,930	0.02
	(3.502)	(1.699)		
Childcare	20.699*	30.487**	3,930	0.44
	(10.309)	(7.163)		
Basic Childcare	10.509	19.534**	3,930	0.44
	(7.468)	(5.296)		
Quality Childcare	10.190*	10.953**	3,930	0.20
	(4.532)	(4.144)		

*Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level [4] Regressions include personal characteristics (age, university education, secondary education, working in the public sector, working self-employed, health status and day of the week dummies (ref: Sunday)) of both members of the couple, and family characteristics (the household has domestic service, number of children 0-1, number of children 2-4, number of children 5-13).*

Table 6. Sum Stats, *Synchronous Leisure* between the spouses and *Leisure with Others*[1,2]

	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1			**Men**			
	Employed	**Unemployed**	**Employed Wife**	**Unemployed Wife**	**Difference Employed-Unemployed**	**Difference Employed wife-Unemployed wife**
Percentage Sync. Leisure	0.469	0.403	0.463	0.530	0.07 (0.00)	-0.07 (0.00)
	(0.005)	(0.022)	(0.005)	(0.022)		
Percentage Leisure with Others	0.622	0.505	0.614	0.679	0.12 (0.00)	-0.06 (0.01)
	(0.006)	(0.028)	(0.006)	(0.024)		
Observations	3,786	144	3,673	257		
Panel 2			**Women**			
	Employed	**Unemployed**	**Employed Husband**	**Unemployed Husband**	**Difference Employed-Unemployed**	**Difference Employed husb.-Unemployed husb.**
Percentage Sync. Leisure	0.547	0.504	0.541	0.613	0.04 (0.01)	-0.07 (0.06)
	(0.006)	(0.016)	(0.006)	(0.037)		
Percentage Leisure with Others	0.620	0.593	0.616	0.664	0.03 (0.12)	-0.05 (0.26)
	(0.006)	(0.016)	(0.006)	(0.042)		
Observations	3,466	464	3,866	64		

Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker.

Table 7. *Synchronous Leisure* between the spouses and *Leisure with Others*[1,2,3,4]

	(1)	(2)	(3)	(4)
		Percentage of Sync. Leisure		
	Sync. Leisure Husband	**Sync. Leisure Husband**	**Sync. Leisure Wife**	**Sync. Leisure Wife**
Own Unemployed	-0.044	-	-	0.016
	(0.024)	-	-	(0.019)
Spouse's Unemployed	-	0.082**	0.072	-
	-	(0.026)	(0.043)	-
N Observations	3,930	3,930	3,930	3,930
		Percentage of Leisure with Others		
	Leisure/Others Husband	**Leisure/Others Husband**	**Leisure/Others Wife**	**Leisure/Others Wife**
Own Unemployed	-0.165**	-	-	-0.061*
	(0.042)	-	-	(0.029)
Spouse's Unemployed	-	0.106*	(0.030)	
	-	(0.043)	(0.073)	
N Observations	3,930	3,930	3,930	3,930

*Notes: [1] Standard errors in brackets [2] Sample consist of couples with both members between 20 and 65 and at least one full-time worker [3] * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level [4] Regressions include personal characteristics (age, university education, secondary education, working in the public sector, working self-employed, health status and day of the week dummies (ref: Sunday)) of both members of the couple, and family characteristics (the household has domestic service, number of children 0-1, number of children 2-4, number of children 5-13).*

APPENDIX A: EXPLANATORY VARIABLES

Age: We control for *Age* (e.g., Kalenkoski et al. [2005], Aguiar and Hurst [2007], Hamermesh and Lee [2007]), and age squared divided by 100 (*Age Squared*), to control for the allocation of time over the life-cycle. For instance, women have their children in their mid-20s and their 30s, which requires them to increase the time devoted to childcare during these years. Obviously, the time required for childcare decreases as children grow older. Also, since childcare and housework are related in many ways, we should expect age to have effects on the time devoted to some housework categories.

Family Structure: We consider the effects of family structure in the analysis of time use (Kalenkoski et al. [2005]). We control for the number of children aged 0-1 (*Number of Children 0-1*), 2-4 (*Number of Children 2-4*) and 5-14 (*Number of Children 5-14*) in the household. The higher the dependence level of children, the more time devoted to childcare is required and, given that all the uses of time are related, we should expect significant correlations between the number of children and the time devoted to household production, with this correlation being greater, the younger the children. We also include the presence of children in the analysis of time stress (e.g., Hamermesh and Lee [2007]).

Education: As in Kalenkoski et al. [2005] and Aguiar and Hurst [2007], we control for the educational level of the individual. Aguiar and Hurst [2007] define highly-educated people as having more than a high school diploma, and show a dispersion of *Leisure* favoring the less-educated in the period 1985-2003, and a larger increase in *Leisure* for less-educated adults in the same period. Kalenkoski et al. [2005] find that highly-educated women devote more time to *Market Work* and *Childcare*. We use two dummy variables to control for the university (*University Education*) and secondary (*Secondary Education*) levels of education (the reference category is primary education).

Household heterogeneity: We also control for household heterogeneity in the production of household services. In particular, we control for household outsourcing (any outside help received, *Outsourcing*). Controlling for the ability of some households to outsource such services is important because it affects the allocation of time of both members of the couple.

Work Characteristics: We control for whether the reference individual works in the public sector (*Public Sector*) or is self-employed (*Self-employed*). We are concerned about the nature of the *Public Sector* (1=yes, 0=no) and *Self-employed* (1=yes, 0=no) variables, since

these are choice variables. However, we are not analyzing the decision of whether to work in the public sector or to be self-employed, given that there are many personal and economic factors determining this choice, so these variables are considered as exogenous.

We also control for the unemployment of the husband *(Husband Unemployed)* and of the wife *(Wife Unemployed)*. We create two dummy variables to indicate whether the husband or the wife is unemployed (1) or not (0). Since all couples contain at least one full-time worker, there are no cases where both the husband and the wife are unemployed.

Health Status: We include the health status of individuals in both time use and time stress analyses (e.g., Kalenkoski et al [2005], Hamermesh and Lee [2007]). The *Health* variable takes decreasing values to indicate a better health status (1= very good … 5=very bad).

Income: For the analysis of time stress, we include the income of both husbands and wives (Hamermesh and Lee [2007]). Since they find that higher incomes lead to stronger feelings of time pressure, we include the income of both partners in the time use regressions. Personal montly income is defined on a 1-to-3 scale, with "1" meaning from 0 to €1000, "2" meaning from €1000 to €2500 , and "3" meaning €3000 or more.