

**“Mondays at the sun”:  
Unemployment, Time Use,  
and Consumption Patterns in Spain\*  
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## Abstract

This paper is a first step towards learning about the implications of unemployment with regard to the combination of consumption expenditures and time use within households under the theoretical base on Becker's (1964) household production theory. We examine the Spanish experience, where the unemployment rate was above 15% since the early 1980s up to the late 1990s and, clearly, many unemployed workers were out of jobs involuntarily, hence forced to adjust their time and consumption allocation patterns accordingly. Our results, overall, seem consistent with the main prediction of the household production theory. What we found is that time intensive commodities (passive leisure, active leisure, housework and child care) are produced more in the households with unemployed individuals. We also find that (with the exception of single females) the proportion of consumption expenditures in time saving goods is lower in the households with unemployed individuals.

Keywords: allocation of time, unemployment, consumption.

JEL Codes: J22.

## Resumen

En este estudio analizamos los efectos del desempleo en las pautas de consumo y en el empleo de tiempo, basándonos en la teoría de Becker (1964) sobre la producción de los hogares. Examinamos el caso de España, donde la tasa de desempleo ha sido alrededor de 15% desde el principio de la década de los 1980 hasta el final de la década de los 1990. Obviamente, muchos de los desempleados estaban sin empleo contra su voluntad, por tanto, obligados a ajustar consecuentemente sus decisiones sobre el uso del tiempo y el consumo. Los resultados, en general, son consistentes con la predicción de la teoría de Becker. Los hogares en los que hay miembros desempleados producen más “mercancías” (*commodities*) intensivas en tiempo (ocio, tareas domésticas y cuidado de niños). También encontramos que, salvo en el caso de las mujeres solteras, la proporción de consumo dedicada a bienes y servicios que ahorran tiempo en la producción de “mercancías” es más baja en los hogares donde hay individuos desempleados.

Palabras clave: asignación del tiempo, desempleo, consumo.

Códigos JEL: J22.

## 1. Introduction

In 2002 the biggest hit in Spanish cinema was *Los lunes al sol* (“Mondays at the sun”). This film is about three unemployed men living in a town in Northern Spain (Vigo) who spend their time sunbathing in the beach, drinking beer, and complaining about globalization, capitalism, and trade union weakness. It earned about 10 millions euros, attracted more than 2 million viewers, and collected five *Goya* awards.<sup>1</sup>

This film nicely reflects a commonly held perception of unemployment, which is considered a terrible waste of human resources and the most important cause of deprivation in modern societies. 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 that they are restricted to allocate their time in activities other than market work. For instance, some unemployed might take advantage of their unemployed period to retrain themselves and improve their marketability and earnings potential, some might dedicate more time on housework and care of other members of the household; some might take more time for resting or enjoying more leisure, maybe, sunbathing at the beach, etc. Presumably, changes in time allocation after falling into unemployment will be carried out simultaneously along with adjustments in the demand for some market goods.

These considerations regarding the use of time have been considered relevant both at the macro and the micro levels. 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 spend on leisure. Moreover, at least since Benhabib et al. (1991), home production and non-market activities are regarded as important elements of models of the aggregate economy with important implications for the performance of calibrated real business cycle models, for the interpretation of the nature of aggregate fluctuations (Hansen and Wright, 1992, Greenwood et al., 1995), for the estimation of the intertemporal elasticity of substitution (see Rupert et al. 2000), and for accounting for international income differences (see Parente et al. 2000). Although there is a very wide empirical literature regarding the estimation of parameters needed for the calibration of general equilibrium models as far as market activities is concerned, there is much less information

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<sup>1</sup> The *Goya* awards are the Spanish versions of the U.S. Academy of Motion Picture Arts and Science’s Oscar awards. This movie also attracted some attention in France and other European countries, but not much in the US. Having being selected by the Spanish Academy of Cinematography to represent Spain in the competition for the 2002 Oscar awards to the best film in foreign language, it did not make it into the last five.

on parameters such as the elasticity of substitution between non-market goods and time devoted to non-market activities.

In microeconomic research, as family economics is gaining some momentum and more and better time use surveys are becoming available, there is a growing research interest on other activities than market work, such as the distribution of homework (Alvarez and Miles, 2003), and childcare (Hallberg and Klevmarken, 2003, Ichino and Sanz de Galdeano, 2003), the use of leisure time (Jenkins and Osberg, 2003), demand for formation and training (Fahr, 2003), transportation (Hertkorn and Kracht, 2002), and health care (Ruhm, 2003, Ruhm and Black, 2002).

This paper is a first step towards learning about the implications of unemployment with regard to the combination of consumption expenditures and time use within households. It examines the Spanish experience, where the unemployment rate was above 15% since the early 1980s up to the late 1990s and, clearly, many unemployed workers were out of jobs involuntarily. Hence, this is a good scenario to investigate how the allocations of time and consumption goods change with unemployment. Thus, our main goal is to document how unemployed workers combine time and goods to produce different commodities and how they differ from employed workers and those individuals out of labor force. Given the restrictions on data availability, we mainly rely on regressions using cross-sectional data to compare consumption expenditure *levels* in different goods and time used in different activities between employed and unemployed individuals in several types of households.

The paper contains five more sections. Section 2 reviews the literature on the consequences of unemployment regarding changes in consumption and welfare, including the predictions of models of household production which explicitly consider time use and goods in the production of utility-enhancing commodities. Section 3 lists the main activities and consumption categories to be considered in the empirical analysis, while Section 4 describes the data and Section 5 discusses the main results. Finally, section 6 contains some concluding remarks.

## **2. Unemployment, consumption, and welfare: a review of the literature**

Human well-being does not depend solely on goods and income, or on market work only, but it also depends on other activities, such as domestic production, housework, and care of children or other household members, and on the amount of leisure enjoyed and knowledge acquired. Thus, when evaluating the harm of unemployment, it is important to consider three factors: i) the loss of production or income, ii) the increase in home production from the

additional time available, and iii) the direct impact of unemployment on individual well-being.

In what follows we will focus on the second factor and stress that alternative uses of time will determine the economic cost of unemployment, which will be smaller than the derived loss of income if valuable non-market commodities, such as domestic goods and care for children and other members of the household, are produced with the additional time available. Even in the case that increased non-market time were spent entirely on leisure or resting, the welfare costs of unemployment should take into account of the value of these activities perceived by the unemployed individuals. Before proceeding, we provide a brief tour of the literature on the harm of unemployment.

This literature has followed several routes. One focuses on the loss of income and consumption derived from unemployment, analysing consumption behavior, testing the permanent income hypothesis and searching for the impact of insurance mechanisms (credit markets, the Welfare State, interpersonal transfers, etc.) to explain consumption smoothing in the aftermath of several shocks (fall in earnings, unemployment shocks, etc.). For instance, Dynarski and Gruber (1997) find that in the US families do smooth consumption to a large extent: a fall in 1 dollar in the head's earnings implies a fall in 10 cents, at most, in total expenditures in consumption. Gruber (1997) analyzes the role played by unemployment benefits at smoothing consumption in the US. Castillo et al. (1999), using cross-sectional data, compare the difference between the consumption levels of employed and unemployed workers in Portugal and Spain, finding that it is larger in the former country where unemployment benefits were less extended. Studies using longitudinal data are Browning and Crossley (1998) for Canada, and Bentolila and Ichino (2003) for Spain, Italy, US and the UK.

A less traveled route in recent years is the use of compensating variation to measure the payment that would make an unemployed worker indifferent between being employed at its desired number of hours and being unemployed, as done in Hurd (1980). More often, empirical studies use survey data to relate individual characteristics, including employment status, and subjective "happiness" (see, for instance, Clark and Oswald, 1994, Korpi, 1997, Di Tella, MacCulloch and Oswald, 2002). Within this branch of the literature, some studies focus on an objective indicator of "well-being" by using some measures of health status. Thus, there are estimates of the increase in the probability of suffering some mental distress from the loss of labor earnings (see, for instance,

Bjorklund, 1985).<sup>2</sup> These studies try to provide support to the view that unemployment has a negative impact on individual's "happiness" that goes well-beyond that implied from the income loss.<sup>3</sup>

An alternative strand of the economic literature on the implications of employment status for time and consumption expenditure allocations follows Becker's (1965) theory of household production. Under this approach, individuals' utility depends on commodities which are produced using both consumption goods and time. Hence, the cost of unemployment should be computed looking at how unemployment changes the combination of goods and time used to produce the utility-enhancing commodities. Moreover, survey data indicates that different activities have different impact on individuals' mood, with working being the activity, together with commuting, to which individuals seem to assign a lower degree of satisfaction, while time spent on sex and other leisure activities provide the highest levels of satisfaction (Layard 2003).

Although this approach has delivered many insights for issues in labor economics and other areas (see Gronau, 1997, for a survey), there is a lack of empirical studies aimed at measuring how households combine goods and time, depending on employment status, and other households' characteristics. Only, recently, Gronau and Hamermesh (2003), using data from the US and Israel, offer a first empirical characterization of the combination of time and goods to produce utility-enhancing commodities within households and of the impact of some demographic characteristics (namely, education levels and age) on the relative time intensities of the alternative commodities.

The main reason for this unsatisfactory state of affairs is the lack of microeconomic data on time use (based on time budget diaries, not on recall questions) and consumption expenditures.<sup>4</sup> Some countries carry out longitudinal consumption expenditure surveys which can be used to measure changes in consumption after some changes in households' characteristics or employment status of the members of the households (as in Dynarski and Gruber, 1997, and Bentolila and Ichino, 2003). Time use surveys are less common, and, when available, they are, almost exclusively, of a cross-sectional nature. Moreover, their sample sizes are small, so that it is rarely feasible to examine the impact of some particular variables on time use with the proper controls. This particularly applies to employment status, since the proportion of

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<sup>2</sup> Other studies (for instance, Ruhm, 2003 and Ruhm and Black, 2002) claim, on the contrary, that health status is countercyclical, since unemployment improves physical health through the reduction of smoking and drinking, lower calories intake, fewer traffic accidents, and the rise of leisure time devoted to physical exercise.

<sup>3</sup> This view is strongly endorsed by Layard (2003).

<sup>4</sup> See Juster and Stafford (1991) for a survey of empirical findings and measurement problems in empirical studies on the allocation of time.

households' heads who declare to be unemployed in this type of surveys tend to be rather small (as it also happens in consumption expenditures surveys).

Following this approach, the extent to which individuals adjust their consumption patterns when they become unemployed depends on several factors. First, if the unemployment spell was anticipated, self-insurance is highly likely, so that there would be no fall in disposable income. Alternatively, if it was not anticipated, if there are liquidity constraints, if consumption and leisure are non-separable, and if other sources of insurance (unemployment benefits, family transfers, etc.) are not available, total consumption may fall when falling into unemployment.<sup>5</sup>

As for time use, since unemployed workers experience increases in their non-market time, they will reallocate time to optimize according to the new circumstance. For instance, time intensive activities like domestic work can substitute goods and services previously purchased in the market which are relatively more expensive when the individual is unemployed. The theory of household production stresses the scarcity of time as the main determinant of distribution of expenditures and time between goods-intensive and time-intensive commodities. Thus, an increase in the shadow price of time raises the relative price of time intensive commodities, and, hence, expenditures in goods-intensive commodities increase. Unemployment is associated to a fall in income and an increase in time available for activities other than market work. Thus, unemployed workers face a shadow price of time much lower than employed workers so that they should devote more time to time-intensive commodities and less to goods-intensive commodities. We also expect some differences among unemployed in this regard depending on the degree of labor market attachment of the individual. Hence, insofar as gender is a factor determining labor market attachment, we would expect some differences in time use and expenditure patterns between unemployed men and unemployed women. These considerations guide the analysis of the differences between employed and unemployed workers in their distribution of consumption and time use in the next sections.

### **3. Selecting commodities, and allocating consumption expenditures and time use**

The first step in any empirical analysis of consumption and time use patterns following Becker's (1965) theory of household production is to define relevant commodities and to identify the set of goods and activities which are used to produce each commodity. Relating human activities to commodities is

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<sup>5</sup> See Bentolila and Ichino (2003) for a detailed discussion on the likely effects of unemployment on total consumption expenditures.

undoubtedly a challenging and controversial task. As an example, we can point out to the serious conceptual issues regarding the distinction between “productive” and “personal” activities, and which should be included in welfare computations.<sup>6</sup> Data availability from time budget and household expenditure surveys also conditions the degree of detail which the researcher can achieve in this regard.

Given the goal of this paper, that is, to measure and compare time use and consumption patterns of individuals with different employment status, we go for wide categories where sufficient variability can be observed. In particular, we group commodities, time use, and expenditures in the following categories:

| <b>Commodities</b>      | <b>Time Use</b>  | <b>Expenditure</b>   |
|-------------------------|--|--|
| Basic Personal Care     | Sleep, Personal hygiene, Eating, Health care                                 | Food, Apparels, Health care, Personal hygiene              |
| Housing (House work)    | Purchasing, Cooking, Cleaning, Home maintenance                              | Rent (real or imputed), House maintenance, House equipment |
| Child Care              | Child care   | Education for children, Apparels for children              |
| Active Leisure          | Training, Sports, Reading, Job search, Social services, Gardening, Repairing | Training, Sports, Communication and Reading                |
| Passive Leisure         | Conversation, Spectacles, Resting  | Alcohol, Tobacco, Tourism, Spectacles                      |
| Money-Saving Activities | House work, Child care, Adult care, Repairing                                |  |
| Time-Saving Expenditure |  | Kindergarten, Restaurant, Domestic service, Air trip       |

In the case of time use, time dedicated to market work and transport is not included, while, in the case of expenditure, work related transport expenditures are excluded. We analyze two additional categories, one for time use and the other for expenditure, which are not mutually exclusive with other commodities. The former is called *money-saving* activities which include time dedicated to house work, repairing, child care and adult care. The latter is called *time-saving* expenditure, which includes expenditures on nursery and kindergarten, restaurant, domestic services and air trip.

Using this classification we depart from Gronau and Hamermesh (2003) in several respects.<sup>7</sup> First, we do not attempt to construct an exhaustive set of commodities. Secondly, we distinguish active from passive leisure, as we expect

<sup>6</sup> On this matter, see Joyce and Stewart (1999).

<sup>7</sup> The list of commodities in Gronau and Hamermesh (2003) are: Sleep, Lodging, Appearance, Eating, Childcare, Leisure, Health, Travel, and Miscellaneous.



unemployed workers to devote more resources to activities which may enhance their employability, which are those included in the former category, so that their use of leisure time would be qualitatively different to employed workers. Third, we group some activities like sleep, personal hygiene, eating, and health care, which Gronau and Hamermesh (2003) find to be relatively time-intensive, into one category named as personal care. Finally, we examine two other categories, money-saving activities and time-saving expenditure, which are not exactly commodities but provide alternative measures of time use and expenditure behaviors of individuals and households.

#### 4. Data

Ideally, one would like to have data on both time use and consumption expenditures from the same households to be able to analyze both allocation decisions simultaneously. Unfortunately, we have no such data and are not aware of its existence anywhere. Hence, we make use of two separate surveys, one for time use and the other for consumption expenditures. The consumption expenditures survey has a longitudinal structure, while the time use survey provides only cross-sectional data. For consistency, we will not exploit the longitudinal nature of the data on consumption expenditures and restrict ourselves to examine the distribution of time and the distribution of consumption expenditures separately.

The time use data is drawn from the *Basque Country Time Budget Survey* (Encuesta de Presupuestos de Tiempo en el País Vasco, EPTPV) carried out in 1993 and 1998.<sup>8</sup> The sample in each survey includes about 5,000 individuals of the population of ages 16 or more. Only one person is selected for each household. Each individual reports his/her time use (in minutes) during a certain day using a time-diary method and her employment status one week before the date of the survey. Of other household's members only their basic socio-demographic information is collected, such as sex, age, marital status and education level.

One *advantage* of the survey is that the sample size is sufficiently large to provide us with a considerable number of unemployed workers. For example, out of 9,925 individuals in the sample 861 persons were unemployed. One *disadvantage* of the survey is that only one member in each household is selected to fill in the time diary. Therefore, we do not have information on the time allocation of other members of the household.

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<sup>8</sup> At the time this paper was written, the Spanish Statistical Office presented the preliminary results of a Time Use Survey conducted in the whole country based on time diaries and following EUROSTAT's guidelines. Unfortunately, the individual data from this survey will not be made available to external researchers until mid-2004.

For our analysis we have selected two types of households, married-couple households and single person households where, in both cases, the household head is below 60 years old. We exclude those whose reported time diary is for Saturday or Sunday (about a half of the sample), due to a small variation in the time use pattern by employment status, and unemployed individuals who declared a strictly positive time devoted to market work. Our final sample consists, after pooling observations for 1993 and 1998, of 1,100 married men, 1,059 married women, 93 single men and 72 single women. All of the observations refer to individuals living in the Basque Country, a Northern Spanish region.

Summary statistics for this sample can be found in Table A.1 in the Appendix. For married individuals, around 50% of the observations are for 1998, while for single individuals more than 60% (63.8% for males and 79.4% for females) are observations for this year. Time use is measured in minutes per day. The mean value of market work time is 442.2 minutes for married males and 147.2 minutes for married females. For singles, mean market work time is 362.1 for males and 328.8 for females. Leaving aside market work, the activities where most time are spent are Personal Care (626.7 for married males, 645.6 for married females, 614.0 for single males, and 657.2 for single females) and Passive Leisure (176.5 for married males, 176.4 for married females, 222.1 for single males, and 144.0 for single females). The activity eliciting less time resources is child care (17.3 for married males, 49.92 for married females, 2.5 for single males, and 0.0 for single females).

Regarding demographic characteristics, mean age is similar across household types (43.8 for married men, 42.95 for married women, 43.0 for single men, and 41.8 for single women). The employment (unemployment) rates of married men and married women turns out to be 87.0% (7.2%) and 36.9% (8.3%), respectively. The corresponding values for single men and single women are, respectively, 76.9% (13.2%), and 76.8% (11.7%). Since 1993 was a drought in the business cycle while 1998 was at the middle of an expansion, the observations for this year give much lower unemployment rates for all groups (3.8%, 3.9%, 3.9% and 8.4%, for married men, married women, single men and single women, respectively). Married males are relatively more educated than married females, while single females are relatively more educated than single males. In more than 20% of household with married individuals there are children aged 0-4, and in around 16% of the same households there are children aged 5-9. The mean number of children is about 1.7.

As for data on household expenditures we use the Spanish *Continuous Family Expenditure Survey* (ECPF) which report employment status, demographic characteristics of the family members, and information on

household consumption expenditure. It is a survey with a quarterly rotating structure, with households observed for eight consecutive quarters. We use annualized data for 1998 and 1999 where the amount in 1999 is discounted by the inflation rate for that year to have the expenditure at 1998 price. Our final sample, after applying the same selection conditions as in the time use data, consists of 9,156 married-couple households, 279 single male households, and 285 single female households. The observations refer to households living throughout Spain, not only in the Basque Country. Although we could have selected from the observations of consumption expenditure survey only those individuals in the Basque Country, this would have much reduced the sample size at a small gain.<sup>9</sup>

Another structural difference between the time use data and the expenditure data is that while the time use data refers to one individual for each household, the expenditure data refers to each household. This causes no problem for single person households, but for the multi-person households (in our case, married-couple households) we have to take this difference into account when interpreting the results.

Summary statistics of the data on consumption expenditures are in Table A.2 in the Appendix. We make use of the proportion of expenditures devoted to each commodity and also of the value of total expenditures (in units 100,000 Spanish, that is, 601.01 euros). Overall, married couple households devote a higher proportion of the consumption expenditures to personal care than single households, with single female households devoting about 6.5 percentage points more than single male households to this category). Alternatively, single households devote a higher proportion of their expenditures to housing. Passive leisure is the third category receiving a higher proportion of expenditures, being much higher for single male households (21.7%) than for married couple households (16.1%) and single female households (9.4%). The proportion of expenditures devoted to time saving goods and services is 10.7% in married couple households, 14.9% in single male households, and 6.8% in single female households. Finally, child care receives a 3% of expenditures in married couple households.

As for demographic characteristics, the male unemployment rates turn out to be 4.3% in married couple households and 12.5% in single male households. As for females, the corresponding values are 6.3% and 9.3%, respectively. The proportions of married couples with children aged 0-4 and aged 5-9 are 20.8% and 17.8, while the mean number of children in the household is 1.8, similar values to those found in the time use sample. As in the case of the time use

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<sup>9</sup> When we used only observations from the Basque Country, the results were similar but statistical significance of estimated coefficients are often substantially reduced as its sample size is about 5% of the national sample.

sample, married couple households are relatively less educated than single individual households, being the difference in this regard between single male and single female households almost negligible.

## 5. Results

We measure the differences in the distributions of households' resources (time and consumption expenditures) between employed and unemployed individuals by performing Tobit regressions using the two cross-sectional samples described above. In the Tobit regression for the allocation of time to different activities, we include as independent variables, besides own employment status, the spouse's employment status, age and its square, the level of education (primary, secondary and tertiary) and a dummy for year 1998, and, in the regressions for married couple households, additionally, the number of children in the households and two dummies for children aged 0-4 years and 5-9 years. The independent variables included in the Tobit regression for the allocation of consumption expenditures to different activities are, in addition to those in the regression for the allocation of time, household's income and its square.<sup>10</sup> Since in this regression we are controlling for total household's income, the estimated differences in the allocation of consumption expenditures between employed and unemployed individuals should be related to time scarcity, not to an income effect. We perform regressions for the expenditures in each category as a proportion of total expenditures.

One pending issue when interpreting the results of this regression analysis is the likely endogeneity of the employment status. If unemployment is involuntary, then the coefficient of the unemployment variable in the time use regression reflects the response of the individual to an exogenous change in the shadow price of time. Similarly, if unemployment is involuntary and unanticipated, then the coefficient of the unemployment variable in the consumption expenditures regression measures the adjustment in the allocation of financial resources to an exogenous change in income, which is the net result of the loss of labor earnings and the possible rise in non-earned income by means of Welfare State benefits or interpersonal transfers within the household or within an extended family network (see Bentolila and Ichino, 2003).

However, it is also conceivable that some individuals choose to change their employment status (from employment to unemployment or to non-participation in the labor market) voluntarily in order to change their allocation of time. This source of bias could be particularly relevant for the individuals with a lower degree of attachment to the labor market, in particular, in the case

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<sup>10</sup> Unfortunately, the information on household income is not available in the time use sample.

of females out of the labor force.<sup>11</sup> It is also relevant in the case of married couples who perform some *division of labor*, that is, where the male and the female roles within the households are clearly delimited following traditional patterns. Given the nature of our sample, there is not much we can do to dealing with this source of bias, other than interpreting the corresponding estimated coefficients as differences among individuals and households with different characteristics rather than as a causal effect of unemployment on time use and allocation of consumption expenditures. To make this interpretation more informative we run separate regressions for two different types of households (married couple household and single individual households) and also distinguish by gender.

The results are reported in Table 1 for time allocation, and in Table 2 for consumption expenditure allocation.<sup>12</sup> In the following we discuss some main results focusing on married men and women since the results for singles are less robust due to their small sample size.

- a) Unemployed workers spend substantially more time on all activities other than market work than employed workers. On the money-saving activities such as housework and child (and adult) care, they spend about 3 and a half hours more each weekday than employed workers. With respect to consumption expenditure, total amount of consumption expenditure is about 1,200 euros (about 10% of average annual expenditure) lower in the households in which the husband is unemployed than in those the husband is employed. In each type of expenditure, as a proportion over the total, expenditures on personal care increases while those on active leisure decreases if the husband is unemployed. Time-saving expenditure decreases by 0.67 percentage points if the husband is unemployed. In summary, there is a clear evidence that unemployed workers spend more time on domestic commodities to substitute for market goods and enjoy more leisure compared to the employed. As we do not know the value of additional domestic commodities and leisure relative to that of the reduced consumption of market goods, we cannot say much about overall welfare costs of unemployment. However, we might conjecture that the welfare loss from the reduced consumption (10%) is likely to be not too high compared to the gains in domestic production and leisure. Of course, these figures refer to contemporaneous losses and gains. To evaluate the welfare loss or gain, one has to consider the entire period of unemployment since they might vary over the unemployment duration.

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<sup>11</sup> Prodromidis (2003) shows that the selection bias is important in regressions explaining how British women allocate time between market work, non market work, and leisure.

<sup>12</sup> For simplicity, the Tables only contain the estimated coefficients for the main variables of interest: employment status. The full sets of results are available upon request.

- b) Between the unemployed and non-participants, there are some similarities and some differences. For example, non-participants spend more time in personal care and passive leisure than the unemployed while the opposite is true with respect to the time spent on active leisure and domestic work (for men only). With respect to the time spent on money-saving activities, there are no significant differences between the two groups.
- c) By gender, there are some interesting differences in the effect of employment status on time use and consumption allocation. In time use, the unemployed-employed difference is greater among men in leisure and child care, while it is greater among women in housework and money saving activities. This suggests that unemployed men use their increased non-market time more on market-oriented commodities such as job search while unemployed women use more time on home-oriented commodities such as domestic production.
- d) The differences in time use and consumption between employed and unemployed also depend on the spouse's labor market status. For an unemployed man, if his wife is not working, his dedication on housework or other money-saving activities increases less than otherwise, while his leisure time does not depend much on his wife's labor market status. For an unemployed woman, the time dedicated on active leisure decreases if her husband is also unemployed but the opposite is true with respect to the time dedicated on housework.

A summary of the main differences between unemployed and employed individuals with regard to the allocation of time and consumption expenditures is presented in Table 3. Overall, they seem consistent with the main prediction of the household production theory. As time is less scarce, we will expect that unemployed spend more time in the production of commodities which are relatively time-intensive. What we found is that time intensive commodities (passive leisure, active leisure, housework and child care) are produced more in the households with unemployed individuals. We also find that (with the exception of single females) the proportion of consumption expenditures in time saving goods is lower in the households with unemployed individuals.

## 6. Concluding Remarks

Unemployment is typically associated to a fall in labor earnings, to an increase in non-earned income, and to a rise in non-labor time. Even if individuals smooth consumption and total expenditures are unchanged, the shadow price of time falls when unemployed. Hence, if the productions of utility-enhancing commodities involve different time and good intensities, it is very likely that the allocations of non-labor time and expenditure on consumption goods differ with the employment status. While consumption

changes are usually taken as a measure of the painfulness of unemployment, leisure and other alternative uses of time are disregarded in this type of calculations.

Ideally one would like to observe how different individuals change their allocation of consumption and time when going from employment to unemployment. This requires the use of longitudinal data on consumption, available for some countries, and on time use, which are not available in a panel dimension. Thus, regarding time use, we can only compare unemployed and employed individuals and, very often, time use surveys do not provide sufficiently large samples to measure, with the proper controls, the time allocations of individuals of different employment status. While we do not have the longitudinal data to solve the first problem, we do have a sufficiently large sample of unemployed individuals to overcome the second problem. The data come from a relatively large time use survey done in the Basque Country, a Northern region in Spain, for 1993 and 1998, when the unemployment rate was between 15% and 20%, roughly.

Our results show that unemployed individuals devote their excess of non labor time, in relation to employed workers, to passive leisure and domestic work. They also increase, but to a lesser extent, the time intensity of the production of commodities associated to active leisure and child care. We also find that unemployed behave, in this regard, differently to non-participating individuals, who have available the same amount of non labor time.

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, we believe that they provide interesting evidence for the measurement of home production, and, eventually, for the measurement of the costs of unemployment using the perspective of the home production theory. While waiting for richer data allowing observing simultaneously consumption expenditures and time allocations for the same household, this evidence suggests that there is much to be learned about the home production decisions and its implications for a whole array of economic issues.

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**Table 1. Effects of employment status on time use**  
**Results from Tobit regressions**  
**Dependent variable: Minutes per day devoted to each activity**

|  | <b>Married Couple Households</b> |                | <b>Single Individual Household</b> |                |
|--|----------------------------------|----------------|------------------------------------|----------------|
|  | <b>Males</b>                     | <b>Females</b> | <b>Males</b>                       | <b>Females</b> |
| <b>Passive leisure</b>                         |                                  |                |                                    |                |
| Unemployed                                     | 162.3 (9.1)                      | 126.1 (7.3)    | 289.8 (3.9)                        | -42.9 (0.6)    |
| Out of labor force                             | 283.0 (18.7)                     | 115.4 (15.1)   | 228.4 (3.5)                        | 332.9 (8.1)    |
| Spouse unemployed                              | 0.72 (0.1)                       | 15.6 (0.8)     |                                    |                |
| Spouse out of labor force                      | 29.7 (7.4)                       | 71.9 (5.8)     |                                    |                |
| <b>Active leisure</b>                          |                                  |                |                                    |                |
| Unemployed                                     | 89.4 (4.5)                       | 28.8 (1.3)     | 176.4 (1.8)                        | 342.6 (5.0)    |
| Out of labor force                             | 66.5 (3.9)                       | 53.7 (5.8)     | 212.9 (2.5)                        | 76.5 (1.9)     |
| Spouse unemployed                              | 2.01 (0.1)                       | -56.9 (2.2)    |                                    |                |
| Spouse out of labor force                      | -15.8 (1.8)                      | -40.6 (2.8)    |                                    |                |
| <b>Domestic work</b>                           |                                  |                |                                    |                |
| Unemployed                                     | 180.6 (10.7)                     | 199.5 (10.1)   | 45.7 (1.2)                         | 239.6 (5.0)    |
| Out of labor force                             | 135.8 (9.2)                      | 218.9 (25.0)   | -21.6 (0.7)                        | -3.18 (0.1)    |
| Spouse unemployed                              | -26.4 (2.1)                      | 42.4 (1.8)     |                                    |                |
| Spouse out of labor force                      | -51.7 (7.0)                      | -50.3 (3.5)    |                                    |                |
| <b>Personal care</b>                           |                                  |                |                                    |                |
| Unemployed                                     | 66.9 (4.4)                       | 39.3 (3.0)     | 53.3 (0.9)                         | 51.1 (0.8)     |
| Out of labor force                             | 141.4 (10.9)                     | 60.0 (10.4)    | 142.0 (2.8)                        | 120.4 (3.3)    |
| Spouse unemployed                              | 5.85 (0.5)                       | 0.14 (0.0)     |                                    |                |
| Spouse out of labor force                      | 7.29 (1.2)                       | -13.13 (1.4)   |                                    |                |
| <b>Money-saving activities</b>                 |                                  |                |                                    |                |
| Unemployed                                     | 202.0 (13.1)                     | 215.5 (10.0)   | 149.5 (3.7)                        | 93.1 (3.1)     |
| Out of labor force                             | 221.8 (19.4)                     | 216.8 (16.8)   | 118.5 (2.7)                        | 42.6 (0.8)     |
| Spouse unemployed                              | -40.7 (2.37)                     | -13.2 (0.4)    |                                    |                |
| Spouse out of labor force                      | -59.2 (5.9)                      | -30.5 (1.5)    |                                    |                |
| Sample size                                    | 1,100                            | 1,059          | 93                                 | 72             |
| <b>Child care (only couples with children)</b> |                                  |                |                                    |                |
| Unemployed                                     | 64.3 (3.8)                       | 30.2 (1.7)     |                                    |                |
| Out of labor force                             | 40.8 (1.7)                       | 35.7 (4.0)     |                                    |                |
| Spouse unemployed                              | -12.9 (1.1)                      | 34.1 (1.6)     |                                    |                |
| Spouse out of labor force                      | -12.8 (1.8)                      | -10.0 (0.6)    |                                    |                |
| Sample size                                    | 995                              | 909            |                                    |                |

Notes: Additional regressors are age and its square, level of education, health status, dummy for year 1998, and, for couples, number of children in the household, number of children in the household aged 0-4, number of children in the household aged 5-9. Unsigned t-statistics are in parenthesis.

**Table 2. Effects of employment status on consumption expenditures.**  
**Results from Tobit regressions**  
**Dependent variable: Expenditure in each category**  
**(as percentage of total expenditure)**

|   | Married Couple<br>Household | Single Male<br>Household | Single Female<br>Household |
|---|-----------------------------|--------------------------|----------------------------|
| <b>Personal Care</b>                                      |                             |                          |                            |
| Man unemployed  | 1.15 (2.2)                  | 0.65 (0.2)               |                            |
| Man out of labor force                                    | 0.30 (0.6)                  | -3.21 (1.3)              |                            |
| Woman unemployed  | 0.97 (2.1)                  |                          | -0.99 (0.3)                |
| Woman out of labor force                                  | 1.02 (4.2)                  |                          | -0.02 (0.1)                |
| <b>Housing</b>  |                             |                          |                            |
| Man unemployed  | 0.53 (0.8)                  | 15.1 (4.0)               |                            |
| Man out of labor force                                    | 1.01 (1.7)                  | -0.39 (0.1)              |                            |
| Woman unemployed  | -0.11 (0.2)                 |                          | 5.97 (1.7)                 |
| Woman out of labor force                                  | 2.11 (7.2)                  |                          | 9.13 (3.6)                 |
| <b>Passive Leisure</b>                                    |                             |                          |                            |
| Man unemployed  | -0.36 (0.8)                 | -11.3 (3.2)              |                            |
| Man out of labor force                                    | -0.21 (0.5)                 | 7.56 (2.3)               |                            |
| Woman unemployed  | 0.33 (0.8)                  |                          | 0.87 (0.4)                 |
| Woman out of labor force                                  | -1.05 (4.9)                 |                          | -2.10 (1.5)                |
| <b>Active Leisure</b>                                     |                             |                          |                            |
| Man unemployed  | -0.28 (1.8)                 | 2.01 (2.4)               |                            |
| Man out of labor force                                    | 0.45 (3.1)                  | -0.74 (0.9)              |                            |
| Woman unemployed  | 0.21 (1.5)                  |                          | -0.74 (0.8)                |
| Woman out of labor force                                  | -0.10 (1.4)                 |                          | -1.21 (1.8)                |
| <b>Child Care</b>   |                             |                          |                            |
| Man unemployed  | -0.21 (0.9)                 | -                        |                            |
| Man out of labor force                                    | -0.51 (2.3)                 | -                        |                            |
| Woman unemployed  | -0.08 (0.4)                 |                          | -                          |
| Woman out of labor force                                  | -0.34 (3.3)                 |                          | -                          |
| <b>Time-Saving Expenditure</b>                            |                             |                          |                            |
| Man unemployed  | -0.67 (1.6)                 | -13.9 (4.2)              |                            |
| Man out of labor force                                    | -0.77 (2.0)                 | 2.54 (0.8)               |                            |
| Woman unemployed  | -0.42 (1.2)                 |                          | 2.82 (1.3)                 |
| Woman out of labor force                                  | -1.44 (7.7)                 |                          | -1.46 (0.9)                |
| <b>Total Expenditure (in 100,000 pesetas (601 euros))</b> |                             |                          |                            |
| Man unemployed  | -2.31 (3.0)                 | 1.23 (0.6)               |                            |
| Man out of labor force                                    | -1.48 (2.0)                 | -0.92 (0.4)              |                            |
| Woman unemployed  | -0.41 (0.6)                 |                          | 1.70 (0.7)                 |
| Woman out of labor force                                  | 0.14 (0.4)                  |                          | -1.13 (0.6)                |
| Sample size   | 9,156                       | 279                      | 285                        |

Notes: Additional regressors included are age and its square, level of education, total household income and its square, and, for couples, number of children in the household, number of children in the household aged 0-4, number of children in the household aged 5-9. Unsigned t-statistics are in parenthesis.

**Table 3. Summary of estimated differences between unemployed and employed individuals in the allocation of time and consumption expenditures.**

|                            | Passive<br>leisure     | Active<br>leisure     | Domestic<br>work<br>Housing | Personal<br>care      | Child<br>care        | Money-<br>saving<br>activities | Time-<br>saving<br>expend. |
|----------------------------|------------------------|-----------------------|-----------------------------|-----------------------|----------------------|--------------------------------|----------------------------|
| <b>Married<br/>Couples</b> | <b>T: ++<br/>C: 0</b>  | <b>T: +<br/>C: 0</b>  | <b>T: ++<br/>C: 0</b>       | <b>T: +<br/>C: ++</b> | <b>T: +<br/>C: 0</b> | <b>T: ++</b>                   | <b>C: --</b>               |
| <b>Single<br/>men</b>      | <b>T: ++<br/>C: --</b> | <b>T: ++<br/>C: +</b> | <b>T: 0<br/>C: ++</b>       | <b>T: 0<br/>C: 0</b>  |                      | <b>T: ++</b>                   | <b>C: --</b>               |
| <b>Single<br/>women</b>    | <b>T: ++<br/>C: 0</b>  | <b>T: ++<br/>C: 0</b> | <b>T: ++<br/>C: ++</b>      | <b>T: 0<br/>C: 0</b>  |                      | <b>T: ++</b>                   | <b>C: +</b>                |

Notes: T, for time allocation. C ,for consumption expenditures allocation. ++ Large positive difference. +: Moderate positive difference. 0: Not significant difference. -: Moderate negative difference. --: Large negative difference.

## Appendix. Summary Statistics

### Table A.1. Time Use Sample

|                                   | Married Males |                    | Married Females |                    | Single Males |                    | Single Females |                    |
|-----------------------------------|---------------|--------------------|-----------------|--------------------|--------------|--------------------|----------------|--------------------|
|                                   | Mean          | Standard deviation | Mean            | Standard deviation | Mean         | Standard deviation | Mean           | Standard deviation |
| Time Use (in minutes per weekday) |               |                    |                 |                    |              |                    |                |                    |
| Market work                       | 442.2         | 202.2              | 147.2           | 211.6              | 362.1        | 235.1              | 328.8          | 207.1              |
| Domestic work                     | 39.25         | 70.07              | 297.8           | 155                | 80.9         | 71.6               | 126.3          | 78.6               |
| Child care                        | 17.3          | 38.04              | 49.92           | 80.73              | 2.5          | 15.3               | 0.0            | 0.0                |
| Personal care                     | 626.7         | 98.49              | 645.6           | 86.68              | 614.0        | 127.8              | 657.2          | 115.0              |
| Active leisure                    | 43.91         | 67                 | 46.17           | 70.76              | 79.6         | 134.4              | 68.1           | 86.0               |
| Passive leisure                   | 176.5         | 133.8              | 176.4           | 121.3              | 222.1        | 190.8              | 144.0          | 132.5              |
| Money-saving                      | 94.65         | 126.5              | 347.7           | 196.5              | 103.3        | 107.6              | 182.5          | 138.6              |
| % with zero minutes               |               |                    |                 |                    |              |                    |                |                    |
| Domestic work                     | 39            |                    | 1               |                    | 15           |                    | 4              |                    |
| Child care                        | 71            |                    | 57              |                    | 0            |                    | 0              |                    |
| Personal care                     | 0             |                    | 0               |                    | 0            |                    | 0              |                    |
| Active leisure                    | 51            |                    | 52              |                    | 48           |                    | 35             |                    |
| Passive leisure                   | 5             |                    | 4               |                    | 8            |                    | 7              |                    |
| Money-saving                      | 31            |                    | 4               |                    | 24           |                    | 14             |                    |
| Demographic Characteristics       |               |                    |                 |                    |              |                    |                |                    |
| Age                               | 43.81         | 9.056              | 42.95           | 9.414              | 43.0         | 11.5               | 41.8           | 11.5               |
| Employed                          | 0.87          | 0.336              | 0.369           | 0.483              | 0.769        | 0.424              | 0.768          | 0.426              |
| Unemployed                        | 0.072         | 0.259              | 0.083           | 0.276              | 0.132        | 0.340              | 0.117          | 0.324              |
| Out of labor force                | 0.058         | 0.234              | 0.547           | 0.498              | 0.088        | 0.285              | 0.115          | 0.322              |
| Spouse employed                   | 0.379         | 0.485              | 0.861           | 0.346              | ---          | ---                | ---            | ---                |
| Spouse unemployed                 | 0.075         | 0.263              | 0.026           | 0.161              | ---          | ---                | ---            | ---                |
| Spouse out of labor force         | 0.543         | 0.498              | 0.11            | 0.313              | ---          | ---                | ---            | ---                |
| Children aged 0-4                 | 0.215         | 0.411              | 0.202           | 0.402              | ---          | ---                | ---            | ---                |
| Children aged 5-9                 | 0.169         | 0.375              | 0.16            | 0.367              | ---          | ---                | ---            | ---                |
| Number of children                | 1.681         | 0.962              | 1.474           | 0.806              | ---          | ---                | ---            | ---                |
| Primary education                 | 0.507         | 0.5                | 0.575           | 0.495              | 0.452        | 0.500              | 0.206          | 0.407              |
| Secondary education               | 0.337         | 0.473              | 0.305           | 0.461              | 0.371        | 0.486              | 0.449          | 0.501              |
| Tertiary education                | 0.156         | 0.363              | 0.12            | 0.325              | 0.178        | 0.384              | 0.347          | 0.479              |
| Year98                            | 0.492         | 0.5                | 0.466           | 0.499              | 0.638        | 0.483              | 0.794          | 0.407              |
| Unemp*year98                      | 0.038         | 0.19               | 0.039           | 0.195              | 0.039        | 0.195              | 0.084          | 0.280              |
| Number of observations            | 1,100         |                    | 1,059           |                    | 93           |                    | 72             |                    |

**Table A.2. Expenditure Sample**

|                                     | Married Couple<br>Households |                       | Single Male<br>Households |                       | Single Female<br>Households |                       |
|-------------------------------------|------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------|-----------------------|
|                                     | Mean                         | Standard<br>Deviation | Mean                      | Standard<br>Deviation | Mean                        | Standard<br>Deviation |
| Expenditures as proportion of total |                              |                       |                           |                       |                             |                       |
| Personal care                       | 0.284                        | 0.106                 | 0.200                     | 0.122                 | 0.265                       | 0.119                 |
| Housing                             | 0.342                        | 0.123                 | 0.418                     | 0.184                 | 0.506                       | 0.153                 |
| Passive leisure                     | 0.161                        | 0.088                 | 0.217                     | 0.169                 | 0.094                       | 0.083                 |
| Active leisure                      | 0.048                        | 0.030                 | 0.042                     | 0.037                 | 0.054                       | 0.040                 |
| Child care                          | 0.030                        | 0.039                 | ---                       | ---                   | ---                         | ---                   |
| Time saving                         | 0.107                        | 0.077                 | 0.149                     | 0.139                 | 0.068                       | 0.076                 |
| % with zero expenditure             |                              |                       |                           |                       |                             |                       |
| Personal care                       | 0                            |                       | 0                         |                       | 0                           |                       |
| Housing                             | 0                            |                       | 0                         |                       | 0                           |                       |
| Passive leisure                     | 0                            |                       | 3                         |                       | 11                          |                       |
| Active leisure                      | 1                            |                       | 15                        |                       | 4                           |                       |
| Child care                          | 25                           |                       | ---                       |                       | ---                         |                       |
| Time saving                         | 3                            |                       | 13                        |                       | 26                          |                       |
| Demographic Characteristics         |                              |                       |                           |                       |                             |                       |
| Age                                 | 43.927                       | 8.737                 | 43.131                    | 9.708                 | 46.698                      | 10.162                |
| Man employed                        | 0.904                        | 0.295                 | 0.744                     | 0.437                 | ---                         | ---                   |
| Man unemployed                      | 0.043                        | 0.203                 | 0.125                     | 0.331                 | ---                         | ---                   |
| Man out of labor force              | 0.053                        | 0.224                 | 0.132                     | 0.331                 | ---                         | ---                   |
| Woman employed                      | 0.402                        | 0.490                 | ---                       | ---                   | 0.666                       | 0.472                 |
| Woman unemployed                    | 0.063                        | 0.243                 | ---                       | ---                   | 0.093                       | 0.291                 |
| Woman out of labor force            | 0.534                        | 0.499                 | ---                       | ---                   | 0.241                       | 0.428                 |
| With children aged 0-4              | 0.208                        | 0.406                 | ---                       | ---                   | ---                         | ---                   |
| With children aged 5-9              | 0.178                        | 0.382                 | ---                       | ---                   | ---                         | ---                   |
| Number of children                  | 1.764                        | 0.988                 | ---                       | ---                   | ---                         | ---                   |
| Primary education                   | 0.619                        | 0.486                 | 0.495                     | 0.500                 | 0.476                       | 0.500                 |
| Secondary education                 | 0.173                        | 0.378                 | 0.144                     | 0.351                 | 0.171                       | 0.377                 |
| Tertiary education                  | 0.209                        | 0.406                 | 0.361                     | 0.481                 | 0.353                       | 0.479                 |
| Earnings (pesetas, x100,000)        | 27.629                       | 14.054                | 18.372                    | 11.206                | 16.729                      | 9.933                 |
| Number of Observations              | 9,156                        |                       | 279                       |                       | 285                         |                       |

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