ORIGINAL PAPER

How Satisfied are Spouses with their Leisure Time? Evidence from Europe

Inmaculada García · José Alberto Molina · María Navarro

Abstract   This paper first identifies the determinants of spouses' satisfaction levels within the household with respect to their leisure time and, secondly, characterizes whether their preferences have some degree of altruistic or egoistic character in regard to this particular satisfaction. To that end, it formulates a theoretical framework from the collective family model whose stochastic formulations are estimated for 14 EU countries. The general empirical results first reveal that the presence of children has a significantly negative impact on the leisure satisfaction of both spouses. Then, increases in individual incomes lead to lower own leisure satisfaction levels. Both husbands and wives show egoistic behavior with respect to the labor and non-labor incomes (wage rate) of their respective spouses' satisfaction levels.

Keywords   Europe · Leisure time · Satisfaction · Spouses

Introduction

Quite apart from the fact that the general satisfaction of individuals has been extensively studied by psychologists (Diener et al. 1999; Kahnemann et al. 1999), the existing state of research also suggests that reported subjective well-being is a satisfactory empirical approximation to individual utility that can be applied in socio-economic research (Easterlin 2002; Frey and Stutzer 2001; Hamermesh 2004; Oswald 1997). In this context, the family has traditionally been considered as an element which influences the general

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satisfaction level of its members, with this usually taking the form of a marital status variable. In fact, the positive relationship between marriage and subjective satisfaction has been determined as clearly robust; that is to say, it is not limited to certain populations and does not disappear when a variety of other socio-economic variables, such as age or income, are controlled (Clark and Oswald 1994, 2002; Diener et al. 2000; Groot and Maassen van den Brink 2002; Lee et al. 1991).

Despite the clear relevance of the evidence adduced to support this, satisfaction has usually been studied in a way that does not reflect the fact that the family is composed of interdependent spouses, so these intuitive interrelations in reported satisfaction levels among members of the same family are missed. In other words, such an approach falls short of modelling individual satisfaction within the family as a fully interdependent process. In these circumstances, the following question arises: How does one plan the analysis of the effects of one spouse's level of satisfaction on that of the other in the framework of an integrated context?

In an attempt to provide an answer to this question, the present paper assumes a theoretical framework; namely, the family collective approach, in which one spouse's satisfaction not only depends on his/her own determinants, but also on the other spouse's variables (Browning and Chiappori 1998; Chiappori 1988, 1992; Chiappori et al. 2002). In this way, an analysis of the individual's satisfaction within the household will allow for an examination of the interrelationships between spouses, which, in turn, makes it possible to determine whether the preferences of the family spouses have some degree of altruism or egoism.

Objective

Against this background, the paper first analyzes the specific determinants of spouses' satisfaction levels within the household with respect to their leisure time, and then goes on to characterize the type of preferences of the family members according to this reported well-being. This indicator of subjective well-being has been selected after confirming that, despite the ever-increasing importance that this time has for families, in both quantitative and qualitative terms, it is not habitually employed in the literature on individual satisfaction. Rather, this literature has mainly focused on studies of individual satisfaction with respect to personal income (Bonke and Browning 2003; Clark et al. 2004; D'Ambrosio and Frick 2004; Ferrer-i-Carbonell and Van Praag 2003; Joo and Grable 2004) or on the job satisfaction of workers (Ahn and García 2004; Arnold and Lang 2007; Clark 1999; Clark and Oswald 1996; Elliott 2003; Groot and Maassen van den Brink 1999; Grund and Sliwka 2001; Linz 2003; Roehling et al. 2001; Swanberg 2005).

Bearing these points in mind, this paper begins by offering a brief description of the family collective approach adopted in the paper, under the assumption that the family members' preferences are completely altruistic, in such a way that each spouse gives his/her partner's income or leisure equal weight to his/her own variables in the utility function.[1] This theoretical framework makes it possible to derive some stochastic formulations which are then estimated for 14 European Union (EU) countries by using the panel structure which results from the eight waves of the European Community Household Panel (ECHP) (1994–2001).

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[1] A particular case of this general situation appears when preferences are egoistic; that is to say, where individual utility depends on the individual's own income or leisure.

With respect to the estimation strategy, this takes the form of four consecutive estimations; namely pool, fixed effects, random effects and efficient generalized instrumental variables. The fixed or random effects methods correct the heterogeneity bias that appears when the use of subjective variables could imply that some people look at life either pessimistically or optimistically, even though there is *really* no difference in their level of well-being (Clark and Oswald 2002; Ferrer-i-Carbonell and Frijters 2004; Senik 2004). Moreover, it is well known that individuals' behavior is oriented toward achieving higher satisfaction levels. As a consequence, all the variables which can be chosen by individuals will be endogenous in the satisfaction regression, in such a way that the majority of estimated parameters obtained by standard regressions are likely to be underestimated. A standard solution to this endogeneity bias, which depends on the degree that individuals can choose these actions in order to be happier, is to use instrumental variables (Powdthavee 2004a, 2004b; Schwarze 2004). After conducting these estimations, the strategy selects the one that is statistically most appropriate in every case, by using the Lagrange Multiplier (LM) value as well as two Hausman tests (Baltagi et al. 2003).

The rest of the paper is organized as follows. In the following section we describe the theoretical framework. The next sections are dedicated to the data and the stochastic formulation. The following section is devoted to the empirical results and, finally, we close the paper with a summary of the most relevant conclusions.

The Theoretical Framework

The traditional or unitary approach to the analysis of the family, which assumes that this, even if it consists of different individuals, acts as a single decision-making unit, has given way in the literature to an alternative approach which considers that a household can be seen as a micro-society consisting of several individuals with their own rational preferences.[2] This change is due to the fact that the unitary approach suffers from a number of weaknesses, with one of the most relevant being that the assumption that subjective preferences are inseparable from individual behavior directly leads to an alternative approach, one which explicitly takes into account the notion that a household is a group of individuals.

Family Collective Model: Optimization

In response to this and other weaknesses, Chiappori and his co-authors (Browning and Chiappori 1998; Chiappori 1988, 1992; Chiappori et al. 2002) propose an approach that has gradually gained more acceptance; namely, the family collective model, which, based on the assumption that intra-household decisions are Pareto-efficient, considers that the

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[2] Early attempts in the literature to account for the fact that households may consist of different individuals with their own preferences are those of Samuelson (1956) and Becker (1974a, 1974b). However, in both cases, the authors accepted the traditional approach: In the first case, through an aggregation utility function which is achieved by consensus among individuals; and, in the second, by assuming the utility function of a benevolent head of the family, who takes into account the preferences of all household members.

household consists of two working-age individuals, A = husband and B = wife, whose rational preferences could be represented by altruistic utility functions:

$$u^I = u^I \left[u^I_{q^I} \left(q^A, q^B, q^A_0, q^B_0; z \right), u^I_{q^J} \left(q^A, q^B, q^A_0, q^B_0; z \right), u^I_{q^I_0} \left(q^A, q^B, q^A_0, q^B_0; z \right), \right.$$
$$\left. u^I_{q^J_0} \left(q^A, q^B, q^A_0, q^B_0; z \right) \right]$$
$$I, J = A, B \tag{1}$$

where total utility u^I, I ($I = A,B$) appears as some combination of the utility derived from own consumption, $u^I_{q^I}$, from spouse's consumption, $u^I_{q^J}$, from own leisure, $u^I_{q^I_0}$, and from spouse's leisure, $u^I_{q^J_0}$. All these functions are strongly quasi-concave, increasing and twice continuously differentiable, with the arguments being the two consumptions q^A and q^B, whose prices are unity, as well as both leisure times q^A_0 and q^B_0, and the socio-demographic characteristics of the family included in vector z. Furthermore, the household budget restriction is:

$$q^A + q^B + \omega^A q^A_0 + \omega^B q^B_0 \leq y^A + y^B + \left(\omega^A + \omega^B \right) T \tag{2}$$

where ω^I denote the individual wages, y^A and y^B are the non-labor incomes for individuals A and B, respectively, and, finally, T is the time endowment.

According to the collective approach, the household demand functions can be derived from an intra-family decision process whose only requirement is that it must lead to Pareto-efficient distributions, with this being formally implemented in the following maximization problem:

$$\max_{q^A, q^B, q^A_0, q^B_0} u^A \; s. \; to \; u^B \geq \bar{u}^B \; and \; q^A + q^B + \omega^A q^A_0 + \omega^B q^B_0 \leq y^A + y^B + \left(\omega^A + \omega^B \right) T \tag{3}$$

where $\bar{u}^B$ is some required utility level for individual B. After substituting the demands resulting from (3) in the initial utility function (1), the following indirect utility functions are obtained:

$$v^I = v^I \left[v^I_{q^I} \left(\omega^A, \omega^B, y^A, y^B; z \right), v^I_{q^J} \left(\omega^A, \omega^B, y^A, y^B; z \right), v^I_{q^I_0} \left(\omega^A, \omega^B, y^A, y^B; z \right), \right.$$
$$\left. v^I_{q^J_0} \left(\omega^A, \omega^B, y^A, y^B; z \right) \right]$$
$$I, J = A, B \tag{4}$$

In this general context, we particularly focus on the optimum utility derived from own leisure time on the basis that the individual's leisure satisfaction is affected by both own and spouse's consumption and own and spouse's leisure:

$$v^I_{q^I_0} = v^I_{q^I_0} \left[q^{A*} \left(\omega^A, \omega^B, y^A, y^B; z \right), q^{B*} \left(\omega^A, \omega^B, y^A, y^B; z \right), q^{A*}_0 \left(\omega^A, \omega^B, y^A, y^B; z \right), \right.$$
$$\left. q^{B*}_0 \left(\omega^A, \omega^B, y^A, y^B; z \right) \right]$$
$$I, J = A, B$$

where starred variables indicate equilibrium values.

Changes in Leisure Satisfaction

Bearing in mind that our objective is to determine how the change in the wage and non-wage income affects the utility derived from leisure, we can characterize how the changes in the independent variables affect the individual's utility derived from leisure time, in such a way that:[3]

$$\frac{dv_{q_0^I}^I}{d\omega^I} = \frac{\partial u_{q_0^I}^I}{\partial q^{A*}}\frac{\partial q^{A*}}{\partial \omega^I} + \frac{\partial u_{q_0^I}^I}{\partial q^{B*}}\frac{\partial q^{B*}}{\partial \omega^I} + \frac{\partial u_{q_0^I}^I}{\partial q_0^{A*}}\frac{\partial q_0^{A*}}{\partial \omega^I} + \frac{\partial u_{q_0^I}^I}{\partial q_0^{B*}}\frac{\partial q_0^{B*}}{\partial \omega^I} \quad I, J = A, B \qquad (6a)$$

$$\frac{dv_{q_0^I}^I}{dy^I} = \frac{\partial u_{q_0^I}^I}{\partial q^{A*}}\frac{\partial q^{A*}}{\partial y^I} + \frac{\partial u_{q_0^I}^I}{\partial q^{B*}}\frac{\partial q^{B*}}{\partial y^I} + \frac{\partial u_{q_0^I}^I}{\partial q_0^{A*}}\frac{\partial q_0^{A*}}{\partial y^I} + \frac{\partial u_{q_0^I}^I}{\partial q_0^{B*}}\frac{\partial q_0^{B*}}{\partial y^I} \quad I, J = A, B \qquad (6b)$$

On the basis of these expressions, (6a) and (6b), we can determine whether the wage or the non-wage income of the spouse affects the leisure utility of the individual, with this being an indicator, albeit only a partial one, of how the spouse's variables affect the behavior of that individual. For example, if the spouse's leisure is positively related to own leisure satisfaction, this would be an indication of altruism or, at least, a preference for shared leisure time. By contrast, if there is no relation, then this would be evidence of egoism. Obviously, these concepts, altruism and egoism, must be viewed with caution given that, in this paper, they refer to the particular utility derived from leisure time and how this is affected by changes in the exogenous variables.

The Data

Bearing in mind that the purpose of the study is to estimate the determinants of husbands' and wives' satisfaction levels with respect to their leisure time, the data used in this work come from the eight waves of the ECHP (1994–2001) for each of the 14 sample EU countries.[4] In this present study, families have been selected in which both spouses are between 16 and 65 years old, and where the husband is working. Individuals both with and without children have been included in these households. Those families lacking the required information have been excluded, resulting in a total sample ranging from 38,204 and 33,764 households in Italy and Spain, respectively, to 9,228 and 2,041 households in Germany and Luxembourg, respectively.

Dependent Variable

The ECHP includes questions about several subjective aspects of well-being, inquiring into the level of satisfaction that individuals reach with respect to different aspects; such as, their income. The specific questions this paper is interested in are: "How satisfied are you with your amount of leisure time you have?" Each of these responses takes values from 1

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[3] As we said earlier, our objective is to study the sign of the total effects, without considering the different components into which these can be broken down.

[4] The ECHP is an extensive, sample-based panel survey in which the same households and individuals are interviewed annually. The data come from a standardized questionnaire and are designed to be cross-nationally comparable (Peracchi 2002).

to 6, moving from not satisfied at all (1) to completely satisfied (6). This satisfaction question is based on individual's own perception, in such a way that Tables 1 and 2 begin by showing the simple means which are comparable across the populations after assuming the linearity across response.

Table 1 shows the mean and standard deviation of the dependent variables used in the analysis, as well as the variables which indicate the hours that both spouses dedicate to work and to care of children and other family members (old people, ill people, etc.; McCullough and Zick 1992; White-Means and Chang 1994; Yin 2005). The dependent variables are husband and wife satisfaction (*HusbandSatisfaction*, *WifeSatisfaction*). From a comparison of the mean values, it can be appreciated that husbands declare higher satisfaction levels than wives in Belgium, Greece, Italy, Luxembourg, Portugal, Spain and the United Kingdom, with the opposite being the case in the remaining sample countries.

Given that the ECHP does not provide us with the number of hours dedicated to housework by both spouses, the number of hours dedicated to work and care of children and other family members does not provide us with accurate information about their leisure time. In these circumstances, a comparison between countries could be useful. Thus, we observe that there does not appear to be any relationship between the leisure satisfaction and the enjoyment of more leisure time. We observe that Finland, Germany, Italy and Luxembourg are the countries where a higher number of hours are dedicated to work and care of children and adults (more than 70 h per week). By contrast, Greece, Portugal and the UK are the countries where there appear to be the lowest values (less than 60 h). We have observed that neither of these two sets of countries correspond to those that exhibit the lowest and the highest leisure satisfaction, respectively. In particular, Greece and Portugal appear to have lower values of leisure satisfaction and, at the same time, appear to have the highest number of leisure hours. The opposite can be found in Luxembourg, which shows a higher leisure satisfaction, with a higher number of hours dedicated to work and care of children and adults. These differences reveal the importance of the responses to satisfaction questions in the ECHP, given that this information is difficult to proxy by using observed variables, such as leisure time.

Exogenous Variables

With respect to the exogenous variables, the study first includes a number of individual or socio-demographic characteristics and, secondly, several economic variables. In regard to the former, these include the age of the spouses (*HusbandAge, WifeAge*), the age difference between the spouses (*AgeDifference*), the education level of each of the spouses (*HusbandPrimaryEducation, HusbandSecondaryEducation, HusbandHighEducation, WifePrimaryEducation, WifeSecondaryEducation, WifeHighEducation*), as well as two other variables which refer to the presence of children in the household: a dummy variable indicating if there is a child under 12 in the family (*Children < 12*), and another indicating the number of children under 16 (*Children < 16*).

In regard to the variables which refer to the economic situation of the household, these include wages of both spouses (*HusbandWage, WifeWage*), as well as annual non-wage incomes of both husband and wife (*HusbNon-WageIncome, Wife Non-WageIncome*),

Table 1 Descriptive analysis of the endogenous variables and the variables of hours dedicated to work and to care of children and other persons (Mean and Std. Dev.)

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Endogenous														
Husband Satisfaction	4.689	4.202	4.586	4.306	4.193	4.171	3.754	4.473	3.767	4.557	4.374	3.903	3.893	4.380
	(1.38)	(1.44)	(1.34)	(1.40)	(1.27)	(1.42)	(1.36)	(1.43)	(1.42)	(1.37)	(1.28)	(1.00)	(1.55)	(1.47)
Wife Satisfaction	4.695	4.187	5.762	4.361	4.209	4.244	3.673	4.532	3.592	4.491	4.454	3.898	3.751	4.431
	(1.38)	(1.47)	(1.29)	(1.37)	(1.24)	(1.36)	(1.32)	(1.44)	(1.39)	(1.41)	(1.23)	(0.99)	(1.48)	(1.44)
Hours														
Work husbands	29.40	30.88	30.59	31.42	28.05	31.62	25.57	30.05	30.59	33.46	27.54	28.55	31.66	29.79
	(24.76)	(23.17)	(22.66)	(20.46)	(24.20)	(23.61)	(22.82)	(24.41)	(20.61)	(24.91)	(22.09)	(20.45)	(22.77)	(21.18)
Work wives	17.06	17.48	14.56	22.91	10.65	24.94	15.45	13.18	13.10	11.73	12.17	11.31	19.19	23.32
	(21.21)	(19.43)	(17.76)	(18.06)	(18.47)	(20.59)	(18.92)	(19.09)	(15.32)	(16.95)	(17.97)	(17.30)	(21.01)	(18.50)
Children care husbands	3.33	4.60	3.25	8.49	3.34	5.76	2.69	3.61	6.51	4.50	4.07	0.47	1.30	0.00
	(9.32)	(13.89)	(10.09)	(18.40)	(10.73)	(13.44)	(9.23)	(8.96)	(11.81)	(11.95)	(9.61)	(3.57)	(7.10)	(0.00)
Children care wives	17.10	13.76	11.79	14.63	16.48	12.09	10.44	16.08	18.60	23.63	17.34	1.58	8.67	0.00
	(26.34)	(26.27)	(24.14)	(26.64)	(27.98)	(24.29)	(22.24)	(21.69)	(26.78)	(33.57)	(22.49)	(9.29)	(18.55)	(0.00)
Other persons care husbands	0.56	0.51	0.47	0.47	0.76	0.54	0.30	0.32	0.74	0.64	0.62	0.05	0.24	0.00
	(4.78)	(5.02)	(4.13)	(4.95)	(6.51)	(4.85)	(3.31)	(2.65)	(5.01)	(5.73)	(4.46)	(1.31)	(3.22)	(0.00)
Other persons care wives	2.20	1.28	1.32	0.72	3.34	1.13	0.73	1.33	1.15	2.43	1.87	0.13	2.00	0.00
	(9.48)	(8.43)	(7.31)	(6.08)	(13.83)	(7.31)	(5.48)	(6.86)	(6.09)	(12.01)	(8.06)	(2.37)	(9.80)	(0.00)
All hours husbands	33.29	35.99	34.31	40.38	32.15	37.92	28.55	33.98	37.83	38.60	32.23	29.06	33.20	29.79
All hours wives	36.36	32.52	27.67	38.26	30.48	38.15	26.62	30.58	32.85	37.78	31.38	13.02	29.86	23.32
Number of observations	14,392	14,129	12,083	11,840	31,083	9,228	27,817	11,378	38,204	2,041	24,446	28,803	33,764	14,612

wife's participation in the family income (*WifeParticipation*). Finally, the study also includes a variable which indicates whether the individual is self-employed or a wage-earner (*HusbandSelf-Employed, WifeSelf-Employed, HusbandWage-Earner, WifeWage-Earner*).

Table 2 shows the mean and the standard deviation of each of the exogenous variables used in the analysis. In every sample country analyzed, age of husband is higher than that of the wife. The age difference between both spouses is around 2.5–3 years, with the highest mean value corresponding to Greece, where this age difference reaches 5 years.With respect to the variables that refer to the presence of children in the family, note that around 27% of families have at least one child younger than 12 at home, with this percentage being somewhat lower in Germany (20%) and higher in Austria (35%). However, the mean number of children under 16 does not achieve unity and is, in general, around 0.7, with the highest value appearing in Ireland, with 1.172. In regard to education level, it can be noted that wives show higher percentages than husbands for primary education level in every country analyzed, save for Finland, Ireland and Portugal, where these percentages are similar. By contrast, the percentages of husbands who have attained higher education levels are greater than that corresponding to wives in each sample European Union (EU) country, save for Finland, France and Portugal.

From this simple descriptive analysis it also emerges that husband's mean income per hour is higher than that of the wife in every sample country. With respect to non-wage annual incomes, husband's non-wage income is higher than that of the wife in every country except Denmark. In regard to wife's participation in family income, the mean is 25%, reaching percentages of 43% and 42% in Denmark and Finland, respectively, while in Spain it is around 18%. Finally, note the higher percentage of self-employed and wage-earner husbands as compared to self-employed and wage-earner wives, respectively, in all EU sample countries save Finland in this latter employment situation.

The Stochastic Formulation

Empirical Specification

In order to describe the empirical specification for the determinants of the individual satisfaction, it should be recalled that the panel data structure provided by the ECHP permits the application of techniques that help to control for unobservable heterogeneity. In this way, the model which underlies the observed subjective well-being responses takes the form of linear functions:

$$
\begin{aligned}
v_{it}^I = \mu_{it}^I &+ \beta_1^A w_{it}^A + \beta_2^B w_{it}^B + \beta_3^A y_{it}^A + \beta_4^B y_{it}^B + \delta z_{it} \\
&+ \alpha_i^I + e_{it}^I \quad i = 1, \ldots, N; \ t = 1, \ldots, T; \ I = A, B
\end{aligned}
\tag{7}
$$

where the parameters β and δ are the coefficients that go with the variables; μ and α are constant terms, with μ being the average population and α the individual deviation with respect to this average; and, finally, e are the error terms that are supposedly independent, with null mean and constant variance. These equations are estimated independently for both spouses, in such a way that N is the number of families in the sample.

Table 2 Descriptive analysis of the exogenous variables (Mean and Std. Dev.)

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
HusbandAge	50.374	48.357	47.247	47.529	48.696	49.299	53.203	50.706	51.235	47.081	48.232	51.432	51.129	48.335
	(14.94)	(14.84)	(15.35)	(14.23)	(15.32)	(13.57)	(14.84)	(14.55)	(14.38)	(14.11)	(14.41)	(15.84)	(15.43)	(15.44)
WifeAge	47.339	45.944	44.607	45.364	46.191	46.757	48.221	47.958	47.599	43.932	45.734	48.409	48.380	45.920
	(14.68)	(14.70)	(14.88)	(13.87)	(15.09)	(13.73)	(14.98)	(13.82)	(14.00)	(13.65)	(14.33)	(15.59)	(15.22)	(15.16)
Age Difference	3.008	2.415	2.641	2.157	2.509	2.549	5.015	2.752	3.641	3.177	2.492	3.010	2.765	2.423
	(4.53)	(4.23)	(4.35)	(4.12)	(4.51)	(4.09)	(4.62)	(4.18)	(4.01)	(4.54)	(3.88)	(4.74)	(3.79)	(4.85)
Husband Primary Education	0.211	0.308	0.238	0.303	0.382	0.197	0.599	0.530	0.577	0.498	0.241	0.880	0.703	0.433
	(0.41)	(0.46)	(0.43)	(0.50)	(0.49)	(0.40)	(0.49)	(0.50)	(0.49)	(0.50)	(0.43)	(0.32)	(0.46)	(0.50)
Husband Secondary 0.Education	0.711	0.308	0.413	0.410	0.379	0.476	0.215	0.305	0.282	0.295	0.524	0.068	0.133	0.214
	(0.45)	(0.46)	(0.49)	(0.49)	(0.49)	(0.50)	(0.41)	(0.46)	(0.45)	(0.46)	(0.50)	(0.25)	(0.34)	(0.41)
Husband High Education	0.070	0.316	0.344	0.281	0.191	0.327	0.184	0.155	0.078	0.205	0.216	0.042	0.164	0.339
	(0.26)	(0.46)	(0.47)	(0.45)	(0.39)	(0.47)	(0.39)	(0.36)	(0.27)	(0.40)	(0.41)	(0.20)	(0.37)	(0.47)
Wife Primary Education	0.385	0.344	0.298	0.282	0.436	0.370	0.678	0.499	0.581	0.646	0.341	0.867	0.749	0.517
	(0.49)	(0.48)	(0.46)	(0.45)	(0.50)	(0.48)	(0.47)	(0.50)	(0.49)	(0.48)	(0.47)	(0.34)	(0.43)	(0.50)
Wife Secondary Education	0.545	0.281	0.366	0.363	0.321	0.508	0.179	0.371	0.280	0.247	0.494	0.066	0.121	0.215
	(0.50)	(0.45)	(0.48)	(0.48)	(0.47)	(0.50)	(0.38)	(0.48)	(0.45)	(0.43)	(0.50)	(0.25)	(0.33)	(0.41)
Wife High Education	0.060	0.310	0.330	0.351	0.191	0.117	0.142	0.122	0.059	0.103	0.149	0.042	0.129	0.257
	(0.24)	(0.46)	(0.47)	(0.48)	(0.39)	(0.32)	(0.35)	(0.33)	(0.24)	(0.30)	(0.36)	(0.20)	(0.34)	(0.44)
Children <12	0.352	0.271	0.296	0.339	0.302	0.199	0.272	0.322	0.285	0.271	0.286	0.281	0.279	0.259
	(0.48)	(0.44)	(0.46)	(0.47)	(0.46)	(0.40)	(0.45)	(0.47)	(0.45)	(0.44)	(0.45)	(0.45)	(0.45)	(0.44)
Children <16	0.746	0.843	0.756	0.846	0.785	0.667	0.719	1.172	0.650	0.930	0.781	0.703	0.692	0.753
	(1.02)	(1.10)	(1.03)	(1.15)	(1.06)	(0.98)	(0.95)	(1.37)	(0.88)	(1.10)	(1.07)	(0.99)	(0.93)	(1.06)
HusbandWage	5.971	6.789	8.336	9.001	6.278	7.432	2.825	6.926	0.002	10.317	7.595	2.338	3.706	5.242
	(7.79)	(11.75)	(7.85)	(9.90)	(9.51)	(8.19)	(4.33)	(21.48)	(0.00)	(10.22)	(9.65)	(3.19)	(4.80)	(6.82)

Table 2 continued

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Wife Wage	2.887	4.105	6.170	6.392	3.627	3.323	0.968	2.582	3.457	4.461	4.248	1.277	1.321	3.411
	(4.98)	(5.25)	(21.07)	(9.32)	(6.60)	(5.78)	(2.40)	(5.72)	(5.70)	(7.71)	(7.67)	(2.42)	(3.15)	(6.69)
Husb Non-Wage Income	6,149.507	5,985.885	3,857.816	5,738.627	6,366.984	4,944.830	2,088.185	2,605.644	1.316	8,662.132	5,088.895	1,725.190	3,129.26	2,968.784
	(8,337.33)	(16,297.34)	(7,496.34)	(15,030.21)	(9,288.09)	(8,586.40)	(3,929.44)	(5,643.54)	(2.97)	(11,965.47)	(8,346.27)	(3,750.84)	(5,673.17)	(5,544.07)
Wife Non-Wage Income	2,941.705	3,620.359	4,659.143	525.783	2,484.861	2,331.978	728.712	1,091.070	0.065	2,195.136	1,611.280	715.548	683.10	1,714.733
	(5,359.75)	(5,923.35)	(5,150.34)	(7,218.24)	(4,422.37)	(3,594.95)	(1,820.82)	(2,197.50)	(0.02)	(4,846.14)	(3,298.23)	(1,837.47)	(1,817.97)	(2,519.39)
Wife Participation	0.262	0.318	0.430	0.423	0.301	0.268	0.207	0.219	0.235	0.208	0.243	0.284	0.179	0.327
	(0.23)	(0.22)	(0.15)	(0.16)	(0.21)	(0.21)	(0.24)	(0.23)	(0.25)	(0.22)	(0.21)	(0.25)	(0.24)	(0.20)
Husband Self-Employed	0.105	0.112	0.077	0.176	0.089	0.067	0.323	0.237	0.188	0.086	0.060	0.239	0.155	0.125
	(0.31)	(0.32)	(0.27)	(0.38)	(0.28)	(0.25)	(0.47)	(0.42)	(0.39)	(0.28)	(0.24)	(0.43)	(0.36)	(0.33)
Wife Self-Employed	0.083	0.055	0.033	0.101	0.034	0.028	0.085	0.028	0.055	0.037	0.031	0.120	0.054	0.045
	(0.28)	(0.23)	(0.18)	(0.30)	(0.18)	(0.17)	(0.28)	(0.16)	(0.23)	(0.19)	(0.17)	(0.33)	(0.23)	(0.21)
Husband Wage-Earner	0.529	0.586	0.692	0.530	0.567	0.625	0.318	0.465	0.454	0.631	0.673	0.473	0.460	0.577
	(0.50)	(0.49)	(0.46)	(0.50)	(0.50)	(0.48)	(0.47)	(0.50)	(0.50)	(0.48)	(0.47)	(0.50)	(0.50)	(0.49)
Wife Wage-Earner	0.384	0.467	0.645	0.550	0.437	0.477	0.176	0.334	0.272	0.379	0.500	0.357	0.225	0.536
	(0.49)	(0.50)	(0.48)	(0.50)	(0.50)	(0.50)	(0.38)	(0.47)	(0.45)	(0.49)	(0.50)	(0.48)	(0.42)	(0.50)
Number of observations	14,392	14,129	12,083	11,840	31,083	9,228	27,817	11,378	38,204	2,041	24,446	28,803	33,764	14,612

Estimation Procedure

The estimation strategy is made-up of the following steps.[5] First, each equation is esti-
mated separately, considering the aggregated data; that is to say, a pool estimation is
conducted. A panel data structure is then used in order to estimate functions, considering
individual effects, both fixed and random. As is well known, the difference between the
two lies in the fact that, while in the case of fixed effects the α coefficients are considered
as fixed values for each individual, in the specification of random effects the specific
aspects of each spouse are taken as independent random variables.

In line with that explained earlier in the paper, consideration is also given to an
alternative estimation procedure suggested in the literature; namely, the Efficient Gen-
eralized Instrumental Variables (EGIV), proposed by Hausman and Taylor (1981).[6] This
method followed in this paper uses as instruments individual time averages of the variables
(individual's own wage, presence of children under 12, number of children under 16,
spouse's own wage, male and female non-labour income, wife's participation in family
income and own age) for the time invariant variables that are correlated with the individual
effects (age difference between the spouses, individual's own education levels and spou-
se's higher education level). Thus, this procedure allows for the simultaneous control of the
correlation between regressors and unobserved individual effects by using instruments.
Similarly, it permits the identification of the estimates of the time-invariant covariates,
such as education. Moreover, it avoids the insecurity associated with the choice of suitable
instruments, since individual means over time of all the included regressors can serve as
valid instruments. Additionally, the variance-covariance structure can be taken into
account so as to obtain more efficient estimators.

This EGIV method is implemented in the following steps. First, Eq. 7 are estimated by
pooled Two Stages Least Squares (2SLS), where the set of variables mentioned above act
as instruments. Secondly, the pooled 2SLS residuals are used to construct the weights for a
Feasible Generalized Least Squares estimator. Thirdly, these weights are used to transform
(by quasi-time demeaning) all the dependent variables, explanatory variables and instru-
mental variables. Finally, the transformed regression is again estimated by pooled 2SLS,
where the individual means over time of the time-varying regressors and the exogenous
time-invariant regressors are the instruments. Under the full set of assumptions, this
Hausman and Taylor estimator coincides with the efficient GMM estimator.

After estimating the four alternative specifications, some appropriate econometric tests
allow for the best formulation to be selected in every case. In particular, a Lagrange
Multiplier (LM) test indicates if a panel or a pool estimation is preferred. If a panel
estimation is selected, then a choice must be made from among the three alternative
specifications, with two Hausman tests allowing the best panel estimation to be selected
(Hausman 1978).[7] The first Hausman test (Hausman-1) is the standard to distinguish

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[5] Given the ordinal nature of the dependent variable on individual satisfaction, an appropriate regression
model would be an ordered probit. However, while the random-effects ordered probit model is available in
standard statistical software packages (Ferrer-i-Carbonell and Van Praag 2003; Schwarze 2004; Winkel-
mann 2005), the fixed-effects ordered probit estimator is not. This is why the present paper uses as
approximations both random-effects and fixed-effects regression models, which are perfectly comparable by
using habitual tests (D'Ambrosio and Frick 2004; Ferrer-i-Carbonell and Frijters 2004).

[6] The recent work by Baltagi et al. (2003) provides information on the suitability of the Hausman–Taylor
procedure in a general framework, where panel data are available and some regressors are correlated with
the individual effects.

[7] See, for details, Baltagi et al. (2003), Hausman and Taylor (1981) and Wooldridge (2002).

between the random and fixed effects estimators, whereas the second (Hausman-2) tests the Hausman–Taylor against the fixed effects model.[8]

Empirical Results

This section describes the empirical results, starting with a brief description of the test results that allows for a choice to be made of a particular estimation procedure for each sample country. It then describes the individual and economic determinants of the family member's satisfaction and also explains their type of preferences in regard to leisure, altruistic or egoistic.

Male Leisure Satisfaction

Thus, Table 3 shows the results for male satisfaction. First, the Lagrange Multiplier (LM) tests indicate that the pool estimation is not selected in any sample country. Second, Hausman-1 tests reveal that the fixed effects estimation is preferred over the random effects and, third, Hausman-2 tests indicate that the Hausman–Taylor estimation is preferred with respect to the fixed effects for Belgium, Denmark, France, Italy, Luxembourg, The Netherlands and the United Kingdom, with this latter estimation being selected in the rest of the sample countries.

With respect to the individual or socio-demographic characteristics, Table 3 first reveals that the effect of age is significantly positive in the majority of countries. The effects of the presence of children is generally negative (Lo Wa Tsang et al. 2003), with this being the case in Denmark, France, Germany, Greece, Italy, the Netherlands and Portugal if age is less than 12 years, and in Denmark, France, Germany, Greece, Italy, the Netherlands and Portugal if it is less than 16 years. For their part, the education variables show that male satisfaction significantly decreases when husbands and wives achieved higher education qualifications, with the former result appearing in Belgium, France and the United Kingdom, and the latter appearing in Italy and The Netherlands.

Turning to the economic variables, it can be observed that increases in the husband's wage has a highly significant negative impact on male leisure satisfaction for all sample European Union (EU) countries, save for Finland and Italy. Moreover, this same negative effect from the wife's wage is also observable in Denmark, Greece and Italy. That is to say, husbands from the majority of the sample countries exhibit egoistic behavior in regard to leisure, with their utilities remaining indifferent to changes in their wives' labor incomes. With respect to non-wage incomes, the husband's variable has a positive effect on male leisure satisfaction in Denmark, Finland, France, Greece, Italy, Luxembourg, the Netherlands, Portugal and Spain. However, a non-significant effect appears from the wife's non-wage income in the majority of countries, save in Denmark, Finland, Greece and Italy where it is negative, in this way suggesting egoistic in regard to leisure behavior. It is also observable that increases in the woman's share of family income reduces male satisfaction in Austria, France and Spain, but raises it in Italy. Finally, the self-employment variable has a significantly negative effect in Austria, Belgium, Denmark, Finland, France, Greece, Italy, the Netherlands, Portugal and Spain.

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[8] The 8.0 version of Stata includes the Hausman–Taylor procedure and is used to obtain the estimates presented in this paper.

Table 3 Male satisfaction

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Constant	3.926***	6.655***	5.045**	2.573**	4.668**	4.797**	3.688***	3.562**	2.972**	4.667**	4.304**	3.791**	3.108***	7.200**
	(33.92)	(6.60)	(7.96)	(7.69)	(18.67)	(12.22)	(44.36)	(14.99)	(9.65)	(7.73)	(15.39)	(68.61)	(34.08)	(13.93)
HusbandAge	0.024**	0.007**	0.018**	0.008	0.007**	-0.007	0.011**	0.022**	-0.013**	0.014**	0.004	0.006**	0.024**	-0.006*
	(12.88)	(2.37)	(7.13)	(1.31)	(3.99)	(-0.90)	(7.86)	(4.94)	(-3.57)	(2.07)	(1.55)	(6.47)	(14.99)	(-1.70)
AgeDifference		0.007	-0.006		-0.004				-0.005	0.002	0.007			-0.016
		(0.45)	(-0.64)		(-0.57)				(-0.53)	(0.08)	(0.37)			(-1.26)
Children <12	-0.023	-0.017	-0.054*	-0.008	-0.040**	-0.078*	-0.136**	-0.014	-0.106**	-0.004	-0.077**	-0.050**	0.000	-0.055
	(-0.54)	(-0.67)	(-1.66)	(-0.12)	(-1.96)	(-1.86)	(-5.16)	(-0.36)	(-2.72)	(-0.05)	(-3.40)	(-2.79)	(0.01)	(-1.53)
Children <16	-0.040	-0.063**	-0.034	-0.143**	-0.055**	-0.134**	0.044**	-0.077**	-0.031	0.074	-0.031**	0.002	-0.058**	-0.160**
	(-1.51)	(-2.82)	(-1.53)	(-3.80)	(-3.84)	(-2.31)	(2.52)	(-3.15)	(-1.00)	(0.83)	(-2.07)	(0.16)	(-3.14)	(-4.41)
Husband Secondary Education		-6.287**	-1.412		-2.097**				1.024*	-1.719	0.533			-8.834**
		(-2.26)	(-1.29)		(-2.59)				(1.71)	(-1.14)	(1.02)			(-5.93)
Husband High Education		-1.053	-0.662		-0.192				2.038*	-0.053	0.952			-0.357
		(-0.90)	(-0.75)		(-0.38)				(1.90)	(-0.03)	(0.97)			(-0.53)
Wife High Education		-0.387	-0.350		0.792				-2.034*	-1.637	-2.225**			-0.726
		(-0.51)	(-0.53)		(1.38)				(-1.74)	(-0.94)	(-2.20)			(-1.22)
Husband Wage	-0.100**	-0.085**	-0.076**	0.227**	-0.047**	-0.078**	-0.082**	-0.089**	0.305**	-0.043*	-0.096**	-0.040**	-0.087**	-0.130**
	(-11.54)	(-11.86)	(-8.17)	(4.67)	(-10.09)	(-3.52)	(-18.77)	(-3.88)	(5.27)	(-1.72)	(-9.92)	(-12.63)	(-20.17)	(-5.81)
WifeWage	0.013	0.001	-0.014*	0.008	0.002	-0.013	-0.018**	-0.006	-0.201**	-0.022	-0.009	0.001	0.006	0.067**
	(1.55)	(0.08)	(-1.70)	(0.23)	(0.40)	(-0.62)	(-3.45)	(-0.20)	(-3.74)	(-1.04)	(-0.98)	(0.33)	(1.01)	(3.10)
Husb Non-Wage Income	0.111	-0.011	1.399**	1.593**	1.047**	-2.761**	0.022**	-2.252	6.059**	0.237**	2.362**	0.023**	0.045**	1.668
	(0.75)	(-0.52)	(4.89)	(4.04)	(5.38)	(-1.99)	(2.44)	(-0.58)	(3.01)	(2.44)	(3.89)	(2.17)	(3.83)	(0.43)
Wife Non-Wage Income	0.097	0.063	-0.738**	-1.044*	0.408	-4.821	-0.032*	6.143	-6.291*	-0.165	-1.284	0.003	-0.013	8.449
	(0.51)	(1.35)	(-2.00)	(-1.68)	(1.20)	(-1.55)	(-1.75)	(0.56)	(-1.71)	(-0.91)	(-0.89)	(0.12)	(-0.33)	(1.31)

Table 3 continued

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Wife Participation	-0.227**	-0.126	-0.079	0.453	-0.110**	0.165	0.040	0.047	1.108**	0.226	0.050	-0.060	-0.204**	-0.099
	(-2.72)	(-1.53)	(-0.75)	(1.52)	(-1.99)	(1.19)	(0.68)	(0.37)	(4.15)	(0.76)	(0.80)	(-1.52)	(-3.15)	(-0.89)
Husband Self-Employed	-0.682**	-0.291**	-0.417**	-0.189**	-0.611**	-0.176	-0.395**	-0.074	-0.253**	-0.263	-0.298**	-0.051**	-0.489**	-0.035
	(-11.74)	(-4.29)	(-7.18)	(-2.13)	(-13.92)	(-1.28)	(-12.65)	(-1.11)	(-3.74)	(-1.38)	(-6.56)	(-2.55)	(-12.46)	(-0.58)
LM	5805.94	7546.08	4845.16	1975.21	12550.27	1283.07	2770.73	2980.80	2924.81	267.24	10877.65	13603.89	4535.39	2671.19
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman 1	105.90	67.63	44.15	54.54	72.42	118.55	264.42	53.79	59.04	32.62	121.65	177.76	135.22	134.14
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000
Hausman 2	40.01	3.56	6.31	36.89	9.64	18.08	27.33	23.70	9.79	8.57	3.16	48.43	27.69	3.49
	0.0000	0.9378	0.7080	0.0000	0.3805	0.0343	0.0012	0.0048	0.3680	0.4775	0.9578	0.0000	0.0011	0.9414
Selected estimation	FE	HT	HT	FE	HT	FE	FE	FE	HT	HT	HT	FE	FE	HT
Number of observations	14392	14129	12083	6236	31083	9228	27817	11378	9376	2041	24446	29097	34027	14612

Note: t ratio in brackets. *Indicates individual significance at the 10% level. **Indicates individual significance at the 5% level. ***Indicates individual significance at the 1% level

Female Leisure Satisfaction

Table 4 shows estimations for the female leisure satisfaction. For every sample country, panel estimation is preferred to the pool one, and the fixed effects estimation is selected over the random effects. Moreover, for all countries, except France, Germany and Portugal, Hausman–Taylor estimation is preferred to fixed effects.

First note that female leisure satisfaction increases with age in Austria, Belgium, Denmark, Greece, Portugal and Spain, while it decreases in Finland, France and Italy. For their part, age difference negatively affects wife's satisfaction in Belgium, Finland, Greece and Italy, and positively affects it in the United Kingdom. As before, the presence of a child aged less than 12 years has a negative effect in the majority of sample countries; namely, Belgium, Denmark, Germany, Greece, Italy, Luxembourg, Portugal and Spain. As the number of children under 16 years of age increases, so leisure satisfaction decreases in all the sample countries, save for Luxembourg. Furthermore, for the majority of countries, female satisfaction increases significantly when the husband has achieved higher levels of education and decreases significantly when it is the wife who has attained higher qualifications.

In regard to the economic variables, it can be observed for all sample countries that, according to the egoistic behavior in wage incomes, a higher husband's wage does not significantly affect female satisfaction, while there is a significantly negative effect appearing for the wife's wage in Austria, Belgium, Denmark, France, Germany, Greece, Luxembourg, The Netherlands, Portugal, Spain and the United Kingdom. The wife's non-wage income increases her own satisfaction in Italy and Spain, while it reduces it in Denmark and Germany, while husband's non-labor income does not significantly affect it, according to the egoistic behavior, in the majority of sample countries. The higher the wife's share in family income, the lower the female leisure satisfaction in Finland and Italy, and the higher in Austria, Greece, Portugal and Spain. Finally, self-employment negatively affects female satisfaction in most of the sample countries, except Germany and the United Kingdom, where it is indifferent, and Luxembourg, where it is positive.

Conclusions

This paper analyzed the determinants of household members' satisfaction with respect to their leisure time in a collective family model framework using a sample of 14 EU countries. On the basis of this framework, it has also been possible to study the interrelations that exist between spouses in order to determine the kind of preferences that characterize household members in each of the sample countries. By using country data from the eight waves of the ECHP (1994–2001), four alternative specifications (pool, fixed effects, random effects and efficient generalized instrumental variables) have been estimated and the most appropriate selected in every case by using an Lagrange Multiplier (LM) value and two Hausman tests.

With respect to the selected formulation, the empirical results show that the IV Hausman–Taylor estimator has been chosen in the majority of cases. In regard to the determinants, age has a significantly positive impact on leisure satisfaction of both spouses in Austria, Belgium, Denmark, Finland, Greece, Portugal and Spain. By contrast, presence of children is generally negative, with this being the case for both of the spouses in Denmark, Germany, Greece, Italy and Portugal, when age is less than 12 years and when it is less than 16. Male satisfaction significantly decreases when husbands and wives achieve

Table 4 Female satisfaction

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Constant	4.101**	4.334**	5.680**	6.579**	4.667**	4.960**	3.248**	5.315**	4.853**	4.180**	4.755**	3.907**	2.949**	4.861**
	(19.19)	(9.67)	(18.40)	(10.69)	(41.83)	(13.44)	(31.30)	(13.00)	(14.97)	(5.31)	(30.76)	(74.30)	(25.36)	(14.41)
WifeAge	0.018**	0.010**	0.005*	-0.013**	-0.005**	-0.011	0.012**	0.004	-0.020**	0.012	0.001	0.002**	0.017**	0.005
	(9.54)	(3.11)	(1.68)	(-2.26)	(-2.05)	(-1.43)	(8.89)	(0.94)	(-4.20)	(1.31)	(0.64)	(1.96)	(10.45)	(1.23)
AgeDifference	-0.010	-0.012*	-0.001	-0.025**			-0.009*	0.008	-0.024**	0.001	-0.011		0.004	0.014**
	(-1.59)	(-1.67)	(-0.18)	(-2.36)			(-1.71)	(0.72)	(-2.32)	(0.06)	(-1.13)		(0.65)	(2.36)
Children <12	0.013	-0.073**	-0.146**	0.070	-0.031	-0.168**	-0.282**	0.011	-0.164**	-0.296**	0.030	-0.110**	-0.148**	-0.045
	(0.30)	(-2.66)	(-4.18)	(1.09)	(-1.38)	(-3.95)	(-10.21)	(0.31)	(-4.12)	(-4.14)	(1.29)	(-6.19)	(-5.74)	(-1.19)
Children <16	-0.110**	-0.131**	-0.114**	-0.175**	-0.149**	-0.223**	-0.107**	-0.136**	-0.150**	-0.013	-0.175**	-0.023*	-0.198**	-0.285**
	(-4.05)	(-5.56)	(-4.76)	(-4.75)	(-9.68)	(-3.75)	(-5.89)	(-5.74)	(-4.85)	(-0.14)	(-11.01)	(-1.82)	(-10.85)	(-7.73)
Husband High Education	2.982**	1.122**	1.272**	-0.270			1.498**	3.192**	2.129**	0.715	1.081**		0.917**	2.155**
	(3.98)	(2.39)	(3.48)	(-0.46)			(2.40)	(3.94)	(2.27)	(0.52)	(2.06)		(2.11)	(6.35)
Wife Secondary Education	-0.595	-0.384	-1.555**	-2.447**			1.035**	-3.093**	-0.429	0.079	0.242		1.879**	-2.777**
	(-1.55)	(-0.32)	(-3.16)	(-3.30)			(2.11)	(-3.49)	(-0.97)	(0.03)	(0.70)		(2.33)	(-3.21)
Wife High Education	-0.130	-1.659**	-1.496**	-1.655**			-1.809**	-1.573**	-0.642	-2.642**	-3.290**		-1.445**	-1.947**
	(-0.12)	(-4.79)	(-3.64)	(-2.68)			(-3.33)	(-2.42)	(-0.47)	(-2.39)	(-6.24)		(-4.10)	(-5.52)
Husband Wage	0.007	-0.009	-0.010	-0.077	0.004	0.013	-0.012**	0.018	-0.151**	0.016	0.003	0.004	0.007*	-0.031
	(0.81)	(-1.17)	(-1.00)	(-1.60)	(0.74)	(0.57)	(-3.01)	(0.83)	(-2.67)	(0.60)	(0.31)	(1.41)	(1.65)	(-1.37)
WifeWage	-0.029**	-0.062**	-0.108**	0.222**	-0.065**	-0.056**	-0.077**	0.008	0.093*	-0.065**	-0.056**	-0.042**	-0.067**	-0.099**
	(-3.38)	(-8.29)	(-12.00)	(6.16)	(-11.27)	(-2.65)	(-13.50)	(0.28)	(1.72)	(-2.77)	(-5.91)	(-11.80)	(-11.97)	(-4.38)
Husb Non-Wage Income	0.234	0.008	0.296	-0.062	0.031	-0.062	-0.014	1.672	-4.893**	0.099	0.574	0.008	0.025**	2.278
	(1.54)	(0.39)	(0.98)	(-0.19)	(0.15)	(-0.04)	(-1.50)	(0.45)	(-2.44)	(1.01)	(0.90)	(0.79)	(2.17)	(0.62)
Wife Non-Wage Income	0.063	0.069	-1.316**	0.736	0.304	-7.299**	0.015	-3.451	6.485*	-0.316	2.298	-0.005	0.070*	8.650
	(0.33)	(1.40)	(-3.34)	(1.32)	(0.82)	(-2.30)	(0.81)	(-0.34)	(1.77)	(-1.62)	(1.52)	(-0.21)	(1.84)	(1.36)

Table 4 continued

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Wife Participation	0.178**	0.016	−0.061	−1.163**	−0.038	0.147	0.278**	−0.184	−0.484*	0.278	−0.020	0.129**	0.172**	0.091
	(2.08)	(0.19)	(−0.54)	(−3.97)	(−0.63)	(1.04)	(4.54)	(−1.49)	(−1.82)	(0.87)	(−0.31)	(3.32)	(2.65)	(0.78)
Wife Self-Employed	−0.810**	−0.234**	−0.159**	−0.539**	−0.364**	0.041	−0.279**	−0.268**	−0.392**	0.466**	−0.130**	−0.054**	−0.555**	−0.074
	(−15.13)	(−3.05)	(−2.09)	(−6.01)	(−5.47)	(0.27)	(−6.99)	(−2.33)	(−5.18)	(2.26)	(−2.50)	(−2.43)	(−12.14)	(−0.98)
LM	5971.88	7346.04	3679.28	1884.46	12779.95	1091.11	2884.07	2991.52	2631.52	356.91	10351.89	14665.37	3925.47	2460.63
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman 1	110.45	72.58	54.60	34.49	137.69	90.14	83.57	44.14	71.39	30.45	140.48	183.07	119.13	81.99
	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
Hausman 2	15.06	10.29	2.05	8.41	17.32	20.98	9.62	0.85	7.34	6.14	7.62	31.79	7.66	5.03
	0.0893	0.3274	0.9906	0.4932	0.0440	0.0128	0.3819	0.9997	0.6022	0.7258	0.5727	0.0002	0.5683	0.8318
Selected estimation	HT	HT	HT	HT	FE	FE	HT	HT	HT	HT	HT	FE	HT	HT
Number of observations	14392	14129	12083	6236	31083	9228	27817	11378	9376	2041	24446	29097	34027	14612

Note: t ratio in brackets. *Indicates individual significance at the 10% level. **Indicates individual significance at the 5% level. ***Indicates individual significance at the 1% level

higher education qualifications. For its part, female satisfaction significantly increases when the husband has achieved higher levels of education and significantly decreases when it is the wife who has attained such qualifications. With respect to the economic variables, it appears that increases in individual incomes lead to lower own leisure satisfaction levels. Finally, in regard to the interrelations between spouses, it emerges that, in the majority of sample countries, both husbands and wives show egoistic behavior with respect to the labor and non-labor incomes of their respective spouses; that is to say, satisfaction with respect to own leisure time does not change as a result of changes to the spouse's incomes.

The conclusions with respect to individual and economic characteristics allow us to include, within one and the same group, a number of countries that are distinctive from a geographical perspective. The inclusion of both Nordic and Mediterranean countries, indicates that the effects of the above-mentioned characteristics constitute general results which do not depend, overall, on the specific geographical location of the countries.

An understanding of individual satisfaction derived from leisure time within the family could be particularly useful for policy-makers in evaluating socio-economic policies directed toward the availability of free time. Thus, the empirical conclusions drawn from this study will hopefully assist in the drafting of such policies that have the final object of increasing satisfaction levels shown by spouses within the household.

The finding that children continue to suppose some degree of sacrifice for their parents in terms of their working lives, particularly in the case of wives, and this despite the different levels of public assistance given to them in an attempt to solve the problem of reconciling work and family life, suggests that a number of appropriate social policies remain to be formulated. Above all, it appears necessary to give further support to resolving the conflict between raising children and developing a professional career that is not adversely affected by the decision to raise a family. To that end, legislation to combat sex discrimination or attitudes that discriminate against individuals who have the responsibility of bringing up young children should be strengthened. Similarly, measures should be taken to promote flexibility in the working day.

In regard to the economic variables, and in addition to the policies focused on increasing the income level of individuals, the conclusion that both husbands and wives show egoistic behavior with respect to the labor and non-labor incomes of their respective spouses reveals, among other things, that they both assume that their spouse's incomes are obtained as a result of a higher number of hours worked. This probably has the effect of decreasing the time dedicated to the leisure time that these spouses enjoy. In such circumstances, policies directed particularly toward favoring the availability of free time could have a significant impact on total family satisfaction.

The increase in modeling interrelations within a family, on the basis of satisfaction responses, constitutes a promising new area of socio-economic research, being conducted by us and others. For example, the consideration of children within the family implies some changes to the framework of interdependencies derived from the consideration of spouses alone, with this aspect already being reflected, at least to some degree, in the literature (Altonji et al. 1992; Becker 1991; MacDonald and Koh 2003; Schwarze 2004; Schwarze and Winkelmann 2005; Winkelmann 2005). However, this line of work has yet to be extended to the effects of collusion between children and spouses, where this places one spouse in a non-cooperative position with respect to the other. In this same line, the modeling of ordinal satisfaction responses in habitual data bases (British Household Panel Survey (BHPS), European Community Household Panel (ECHP), German Socio-Economic Panel (GSOEP), Panel Study of Income Dynamics (PSID)) advises the use of ordered discrete models (D'Ambrosio and Frick 2004; Fernández-Val 2005;

Ferrer-i-Carbonell and Van Praag 2003; Schwarze 2004; Schwarze and Winkelmann 2005; Winkelmann 2005) or threshold and sequential models (Boes and Winkelmann 2004), which make use of the advantages offered by the panel structure.

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