# Finantial Satisfaction from an intra-Household Perspective

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## Abstract

We address the influence of relative income at the household level as a determinant of individual financial satisfaction. Our purpose is twofold. First, we want to contrast the hypotheses of relative income within the household. Does the income level of one individual relative to that of other members of the same household matter in his/her impcome satisfaction? Second, we want to test procedural utility haypothesis in that different sources of income may contribute differentially to individuals' income satisfaction. In particular we compare between labour earnings and non-labour income. These two hypothesis are relevant in the policy making with respect to subsidies, taxation and active labour market programs. We use data for Spain contained in the ECHP, starting with an analysis of couples, as defined in the panel, with no other household members. To investigate the stated two dimensions, we propose a model of interpersonal preferences, estimating a multilevel (individual and household) ordered probit model.

# 1 Introduction and motivation

Previous studies have shown that increases in national wealth, based on GDP measures, and taking into account distributional issues, has not lead to increases in individual happiness. Researchers have tried to work out explanations to this evidence. Thanks to the contributions of economists, sociologist and psychologists, there is some consensus on the fact that the role of income in the determination of happiness is influenced by several facts.

First, relative positions in income distribution do indeed matter. There is evidence that people are influenced by other's outcomes and that their behaviour

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is comparison driven . Thus, aspirations defined with respect of some reference group are an important determinant of happiness.

Second, there is always an adaptation to previous experiences, so human beings are quickly adapted to any additional gain, being continuously unsatisfied.. Needs (both fulfilled and non-fulfilled) will determine how agents evaluate current situations, but also new needs emerge as former - or less sophisticated ones - have already been covered. These hedonic adaptation mechanisms introduce a dynamic component on the valuation of own situation.

Morover, there is also consensus on the fact that individual defines her happiness on a bundle of live circumstances (or domains). Individuals are not worried by income by itself, but rather by nonmarket commodities that can be sometimes purchased by income. In a review of major domains of life, Van-Praag and Ferrer-i-Carbonell , follow Easterlin when defining the mediator role of financial satisfaction in the determinacy of subjective well-being. Financial satisfaction would have income as the major input. Therefore, the role of income in overall happiness would be mediated by the financial satisfaction each individual enjoys.

In this paper, we address the influence of relative income at the household level as a determinant of individual financial satisfaction in the following two dimensions:

1. How individual contributions to household income determine financial satisfaction. This first question is related to *income distributional factors* and *allocation decisions* in an *intrahousehold level.* In a model that recognizes that preferences of individuals in the same household are interdependent, the distributional effects may have an influence on personal financial satisfaction. If the relative income, that is, the amount of income contributed once that we control for the amounts that other household members contribute, has an effect on financial satisfaction, then we may find evidence against the income pooling hypothesis.

2. Why different sources of income derive differences in financial satisfaction. In this second target, we want to contrast the *procedural utility hypothesis*: people may have preferences defined over processes as well as over outcomes. In this sense, agent may be affected not only by the amount of money they have access to (in our setting, financial situation), but also on the extent in which they have contributed to the accumulation of that income (by which means the revenue is obtained: own labor, capital,public subsides...) (Frey et al (2003)

The first problem has already be addressed in several works (mainly *JEBO* (Journal of Economic Behaviour and Organization ) special issue, Ferrer-i-Carbonell [12], and Vera-Toscano et al.[23]) that define the existence of peer-effects by which the existence of richer people in the reference group generates negative externalities (Luttmer refers to "neighbors as negatives" ). The effect of intrahousehold influences has rarely been addressed in Subjective Well-Being

works, there are a couple of exceptions by Clark 2003 dealing with job behaviour and satisfaction, and Bonke and Browning 2003 for income and financial satisfaction. While most theoretical and empirical investigation on household allocation processes have focused on objective outcomes such as expenditure and consumption (see Browning 1994, 2004), we find of interest to bring some results for financial satisfaction (a subjective outcome).

Regarding the second issue, to our knowlegde, there are no empirical validations of the effect of procedural utility on financial satisfaction, although other approaches have investigated how rewarding income is (Camemer et all 2004).

Further, even if household can be defined as the most basic and closest reference group to the individual, very little work on financial satisfaction has addressed the question of how financial satisfaction is determined by the household income structure and its attributes.

Both issues are interesting for the evaluation of the effect of *policy interventions* in the form of subsidies and monetary transfers to families or to certain household members.

## 2    Literature review

**On household as the unit of analysis**

The first antecedents (studies) that analyses households as active economic agents are the seminal works by Gary Becker that highlight the relevance of the family as the unit of analysis of social and economic performance. He recognizes that households are not (just) mere passive consumers of goods and services purchased in the market sector, but also active producers of commodities (sometimes nonmarket goods) that satisfy their basic needs by means of optimal combinations of their personal resources. Income would be one of those resource devoted to the purchase of intermediate goods and nonmarketable commodities such as health and prestige. He also considers that while the neoclassical economic theory has considered a one-person household or their members in isolation, his new approach recognizes the interdependence of preferences. Each household decision would then be derived from an interdependent optimization process.

Connected to this approach, joint works by Browning, Bourgignon, Chiappori and Lechene open a new line of research (for the theoretical setting and empirical identification conditions see Browning et al. 1994; for detailed definitions of household allocation models see browning 2004). These authors start from the recognition that household allocations should be considered as the outcome of some process in which different household members with different preferences interact. **Given that a household is not just a single decision maker, factors such as the relative incomes of the household members may affect the final allocation decisions made by the household.** The authors develop a method of identifying how "incomes affect outcomes", this method allows to contrast the "income pooling" hypothesis against the alternative of some "income sharing" rules.

However, they mainly concentrate in objective outcomes: choices made by the individual concerning expenditures or job market participation. We have just found a contribution by Bonke and Browning 2003, that investigates the effect of income contribution on financial satisfaction. Our research is also focused on the effect of income sources and contributions. However, our empirical specification and estimation procedure differs (see below how the multilevel ordered probit model is derived).

**On the utility derived from the source of income**

Behavioral Economics has brought to the discussion the fact that the way goals are obtained provide also a source of utility. Finally, Economy recognizes that not only aims matter, but also the processes matter. As stated in the review of the literature on Happiness Research by Frey and Stutzer 2002, utility is not only defined over outcomes, but procedures have also a relevant role. This brings into discussion a psychologically sounder concept of utility, which includes the so called *procedural utility* (see frey 2003). Other cutting-edge economists as Camerer, Lowenstein and Prelec (2004, 2005) support the fact that utility of income does depend on the value of the goods and services it can buy, but it is also dependent of the source of income, by bringing physiological evidence of how specific brain areas are specially activated when receiving earned money than when getting equivalent rewards for no effort. In their words "*the fact that brain utility depends on the source of income is potentially important for welfare and tax policies*". Again, we will try to get a link between this source dependence and the elicited answers for financial satisfaction. If earned money is more rewarding, some sources of personal income should be more appreciated by the agents, thus leading to higher financial satisfaction.

**On the influence of others**

There is an increasing literature on *peer-effects* or what some researchers call the *external norm* of income (as opposed to the internal norm that deals with the adequacy of income to cope with household needs). In a recent review, Luttmer 2005 examines how relative income in terms of some reference group has an impact in individual satisfaction: does "lagging behind the Joneses" diminish well-being?. However, it is well known that this externality rules only in one direction (ferrer 2005 andveratoscano 2005), the richer members of the group impose a negative externality on the poorest ones, while the reverse does not hold.

In a more detailed way, there are several contributions that explain who these mechanisms operate in financial satisfaction (main references: easterlin 1995, 2001, hollander 2001, luttmer 2005, mcbride 2001 and stutzer 2001), some of these were included in a special issue of the Journal of Economic Behavior and Organization for which Easterlin was the guest editor. We refer to that publication or to vera toscano 2005 for a revision of major findings.

Another point of view of the influence of the "relevant others" was modelled by Clark . He discusses that the interdependent relationship (broadly,

my experience of a phenomenon depends on others' exposure to it) can equally be expressed in terms of social comparisons to reference groups. He uses the terms "social norm" and "social comparison" indifferently. Other authors refer to "social custom" or "social status" in the same spirit. He does empirical work on labour markets in order to prove how social norms explain both satisfaction and behavior.

# 3    Which are the hypothesis that we want to test

In the formal model that we propose below for the individual in each household, personal financial satisfaction is influenced by the amount and type of income that is brought by herself compared with what other members of the household do. In this sense, personal financial satisfaction may be determined by the structure of familiar income (under the assumption that this familiar income is shared / jointly managed and enjoyed by all adults), and dramatically by the fact that the individual contributes to that familiar income

Regarding the intrahousehold distributional issues, we want to test how contributed income in relative terms brings greater financial satisfaction. For operational purposes, we present it in a very simple way (again, we refer to Browning 2004 for greater terminological precision). There could be two competing theories on the decision of how household resources are allocated among their members. While traditional neoclassical consumer theory considers the family as a whole economic unit and unique decisor, household economics takes into account each individual will, by means of a utility function that suffers from social interaction effects (such as altruism or paternalism... in general, other regarding preferences). The first approach leads to the "income pooling hypothesis", while the second one postulates the "income sharing rules" that determines the allocation of income derived from the differences in income sources. Both theoretical and empirical works have developed and contrasted some models that favour each of the above consequences. Even though empirical research seems to reject the income pooling hypothesis, there is nothing conclusive. We believe that intrahousehold decisions may be contextual dependent (as browning 2004 recognizes). We want to find some evidence for financial satisfaction and Spain.

Moreover, there are some regularities reported in the literature that we will jointly contrast. For instance, U-shaped age effects and less satisfaction in every domain for those unemployed.

# 4    Data and empirical specification

## 4.1    Data

We use the dataset for Spain contained in the first wave of the European Community Household Panel (ECHP), corresponding to the year 1994. The usage of this dataset is particularly suitable for our purpose since, among many other socio economic and socio demographic variables that will enter in our analysis,

it records detailed information on the amount and type of personal revenues that conforms household income. Moreover, a subjective question regarding the valuation of *financial situation* is asked to every member of the household above 16 years old.

From that dataset we select the relevant information for couples as defined in the relational file of the ECHP (namely spouse, partner or cohabitee of each other). In order to get a benchmark behavioral model based in the most simple specification (aimed to study our hypothesis in a sample of two-person households so the only income contributors and decisors are the spouses), we restrict our sample to two-person households in which the household members are described as a couple.

A new dataset was constructed by merging own individual information (from the personal file), with information from the income of the spouse (selected using the relational and the personal file), and household characteristics (contained in the household file). Our final sample contains information for 1245 couples(two-person households), therefore 2490 individual observations.

Our dependent variable is *financial satisfaction* (or subjective welfare, in terms of Van Praag 2004). This corresponds with the pk002 -satisfaction with financial situation - question of the ECHP, an ordered variable taking values from 1 to 6 (not satisfied to very satisfied).

In order to explain the determinants of financial satisfaction in our intra-household framework, we introduce into the empirical specification some variables related with the different income sources of the members of the household, personal demographic and socio-economic variables, and observed characteristics of the household to control for further heterogeneity.

To contrast our *procedural utility hypothesis* (the different utility derived from different types of income, in the sense of how they have been earned), we introduce a full dummy variable for the different *main sources of individual income*. There are six different sources of income recorded at individual level: (i) wages and salaries, (ii) income from self-employment or farming, (iii) pensions (old-age related benefits and survivor's benefits), (iv)unemployment / redundancy benefits, (v) other social benefits or grants (family related allowances, sickness / invalidity benefits, educational related allowances, other personal benefits, social assistance, housing allowances), and (vi) nonwork private income (capital income, property / rental income, private transfers received). As stated in the Behavioral Economics literature (camermer 2004, 2005 y frey 2003), we expect that "earned" income has a positive impact on financial satisfaction. This variable, jointly with the measure of the personal contribution to household as defined below, will also allow us to discuss on the potential negative impact of bringing no income to the household in terms of the violation of a social norm defined in the partner level clark 2003.

For the analysis of the relevance of household income for financial satisfaction, we introduce personal and household income in several ways in an attempt to find the best empirical specification, after taking into account the evidence that it is not income in absolute terms that shapes financial satisfaction, but relative income veratoscano 2005.

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We use the reported *total personal income* for the subject and for her spouse. The income information provided by the ECHP consists of annual amounts in the year before the survey, net of taxes and social security contributions, and expressed in Pesetas (Spanish national currency by 1994) and current prices.

We also use the recorded *total household* income of the ECHP. Personal income components are aggregated at the household level to obtain corresponding household variables. Finally, total household income is obtained by summing over the different types of income and over the individuals belonging to the same household.

As we have stated, one of the purposes of this paper is to address the question of how *relative income in the intra-household level* affects personal financial satisfaction. If we control for the share that the individual brings to the couple, we will derive some results on how income distributional factors influence financial satisfaction (see bonke 2003). We construct a variable that represent the individual contribution to household income: *own*. A significant and positive effect of this variable will imply some evidence in favour of the procedural hypothesis, and of the existence of some income sharing rule in the household. As it can be seen in the descriptive statistics that are presented below, there is an unequal distribution of income contributions by gender. This will justify in future research, to carry on a more detailed analysis and, possibly a separate analysis by gender. About 58% of women contributes with less than 10% to the household income (the median share is 0).

In this first approximation to the problem, we further control for personal variables such as *sex*, *age*, *education* and *labour activity status* of the respondent. For the age variable, we contrast the U-shaped regularity reported in nearly every work on Subjective Well-being, possibly due to adaptation to previous experiences and expectations. The education and activity variables will allow us to control for differences in the source and amount of income (since the highest frequency of individual income source as defined above - when there exists some income - corresponds to wages).

## 4.2 Empirical specification

Our behavioral model relies on the interdependence of personal preferences for the members of the couple. In this sense, the financial satisfaction of the male partner of the couple depends on his own personal income characteristics, his wife's, some household characteristics and personal variables that influence the valuation of the financial situation,

$$FS^*_{M,j} = I_{M,j}\beta_M + I_{F,j}\alpha_M + X_{M,j}\gamma_M + Z_j\delta_M + \epsilon_{M,j}$$

While the female counterpart,

$$FS^*_{F,j} = I_{F,j}\beta_F + I_{M,j}\alpha_F + X_{F,j}\gamma_F + Z_j\delta_F + \epsilon_{F,j}$$

where, $\forall j = \{1, ..., J\}$, $i = \{M, F\}$ and

$FS_{i,j}^*$ : is the underlying utility achieved by the *i'th* member (*husband* = $M, wife = F$) of household $j$ by her current financial situation

$I_{i,j}$ : is the vector of own income characteristics (main source of income, total personal income and share of couple income)

$I_{-i,j}$ : is the vector of spouse's income characteristics (main source of income and total personal income)

$X_{i,j}$ : is the vector of personal characteristics

$Z_j$ : is the vector of household characteristics

$\epsilon_{i,j}$ : random term, includes non-observed characteristics of both household and individual.

In a more general form, in order to estimate a multilevel model [19], we could rewrite the specification as follows, (**structural model**)

$$
\begin{aligned}
FS_{i,j}^* &= I_{i,j}\beta_i + I_{-i,j}\alpha_i + X_{i,j}\gamma_i + Z_j\delta_i + \epsilon_{i,j} \\
\epsilon_{i,j} &= v_{i,j} + u_i \\
Var\left(\epsilon_{i,j}\right) &= \sigma_v^2 + \sigma_u^2 = 1 + \sigma_u^2 \\
Corr\left(\epsilon_{M,j}, \epsilon_{F,j}\right) &= \rho = \frac{\sigma_u^2}{1 + \sigma_u^2}
\end{aligned}
$$

However, $FS_{i,j}^*$ is unobservable, instead we can observe the following variable elicited in the survey $FS_{i,j}$. The assumed unobserved underlying continuos variable is denoted by $FS_{i,j}^*$, and the observed categorical variable $FS_{i,j}$ is related to $FS_{i,j}^*$ by the **measurement model** defined as:

$$
FS_{i,j} = \begin{cases}
1 \text{ if } FS_{i,j}^* \leq \mu_1 \\
2 \text{ if } \mu_1 \leq FS_{i,j}^* \leq \mu_2 \\
3 \text{ if } \mu_2 \leq FS_{i,j}^* \leq \mu_3 \\
4 \text{ if } \mu_3 \leq FS_{i,j}^* \leq \mu_4 \\
5 \text{ if } \mu_4 \leq FS_{i,j}^* \leq \mu_5 \\
6 \text{ if } \mu_5 \leq FS_{i,j}^*
\end{cases}
$$

where $FS_{i,j}$ is self-rated financial satisfaction of individual $i$, belonging to household/couple $j$. $\vec{\mu}$ is the vector of unknown thresholds to be estimated with the regressors coefficients.

## 4.3 Estimation methods

Given that we are interested in the intrahousehold influence on financial satisfaction, we have proposed a multilevel model, so we can take into account the influence of personal and household characteristics. Moreover, since we have assumed linearity in the dependence of the unobserved latent variable and the set of regressors and error term, and further assuming that $v_{i,j} \rightarrow N\left(0,1\right)$, a *multilevel ordered probit model* is to be estimated.

We perform the estimation of the defined model using *reoprob* for STATA by G. Frechette 2001.

# 5  Results

In general terms, our results seem to confirm both the procedural utility hypothesis and the relative income hypothesis. The main personal source of income determines how individuals evaluate their financial situation, and the highest the contribution to household income, the highest the satisfaction experienced by the subject.

As in other works that discuss financial satisfaction and general satisfaction, we find a negative impact on the fact of being unemployed. Moreover, for our estimations, if the main income source is derived from unemployment benefits, the individual has more probability of enjoying lower financial satisfaction.

Once that we have taken into account for other income related variables (main source of personal income and share in total household income), we still find that household income (taken in logs) has a positive and statistically significant effect.

Regarding age effects, for our sample and our estimations, there is not an statistically significant effect. Oue results also suggest that education has a negative impact on finantial satisfaction (the higher the level of education the lower is the level of finantial satisfaction reported).

The estimated correlation coefficient is statistically significant, and with a quite high value, suggesting the importance of taking into account the potential correlation when estimating this type of models.


# 6  Final discussion

In this version of the paper, we have focused on our two hypotheses and on the most simple unit of analysis: those couples with no other family members. For the data of 1994 (first wave of the ECHP), we find evidence both supporting the procedural utility hypothesis (there is indeed an effect of the different sources of income) and for the relative income hypothesis.

The distributional effect of intrahousehold income leads us to guess that for Spain, and for the year 1994, it might be interesting to run a separate analysis by gender. For the women subsample, we also plan to develop an extension for those socioeconomic groups that participate more in the labour market.

In the paper with the most similar purpose to ours, Bonke and Browning 2003 report the median of wife's share in income and mention that the share in Denmark is quite high, thus reflecting the high labour force participation of women in their country. For Spain and our sample in 1994, the median contribution is 0, thus proving a very different underlying income distribution at the household level. We now want to exploit the temporal dynamic dimension of the panel to see how increasing participation of Spanish women in the labour market may have induced a different pattern in intrahousehold allocation and financial satisfaction of the members of the couple.

Moreover, we want to extend the analysis to other types of household to cover the whole sample of the ECHP. This is to be done from now on.

# 7 Tables

**Descriptive statistics for our subsample of couples**
$n = 2490$ (with $n_M = 1245$, and $n_F = 1245$)

FINANTIAL SATISFACTION BY GENDER
(FREQUENCIES)

|   | MALES | FEMALES |
|---|-------|---------|
| 1 | 12.9 | 14.0 |
| 2 | 20.0 | 18.2 |
| 3 | 22.7 | 26.0 |
| 4 | 22.2 | 20.3 |
| 5 | 16.8 | 16.2 |
| 6 | 5.4 | 5.3 |

*1= very dissatisfied, ..., 6= very satisfied*

MAIN SOURCE OF INCOME
(FREQUENCIES)

|   | MALES | FEMALES |
|---|-------|---------|
| source1: *no income from any source* | 1.12 | 52.47 |
| source2: *wages and salaries* | 24.32 | 16.03 |
| source3: *self-employment* | 5.66 | 2.71 |
| source4: *pensions* | 55.34 | 14.27 |
| source5: *unemployment* | 3.59 | 1.91 |
| source6: *other social benefits* | 7.89 | 6.46 |
| source7: *private income* | 2.07 | 6.14 |

PERCENTAGE OF OWN SHARE
IN HOUSEHOLD INCOME

|   | MALE | FEMALE |
|---|------|--------|
| *up to 10%* | 1.04 | 57.99 |
| *10-20%* | 0.32 | 3.69 |
| *20-30%* | 0.72 | 6.59 |
| *30-40%* | 1.77 | 9.72 |
| *40-50%* | 6.59 | 12.93 |
| *50-60%* | 11.57 | 5.22 |
| *60-70%* | 9.72 | 1.77 |
| *70-80%* | 6.59 | 0.72 |
| *80-90%* | 3.69 | 0.32 |
| *90-100%* | 57.99 | 1.04 |
| *average share* | 0.82 | 0.18 |

## Table 1: Finantial Satisfaction

| Variable | Coefficient | (Std. Err.) |
|---|---|---|
| Equation 1: Finantial Satisfaction | | |
| source1 | 0.384 | (0.159) |
| source3 | 0.174 | (0.160) |
| source4 | 0.138 | (0.116) |
| source5 | -0.198 | (0.190) |
| source6 | 0.001 | (0.149) |
| source7 | 0.568 | (0.186) |
| sexo | 0.150 | (0.079) |
| own | 0.046 | (0.017) |
| age | 0.022 | (0.017) |
| age2 | 0.000 | (0.000) |
| edu2 | -0.186 | (0.133) |
| edu3 | -0.338 | (0.125) |
| lnhi100 | 1.054 | (0.088) |
| Equation 2 : _cut1 | | |
| Intercept | 14.485 | (1.409) |
| Equation 3 : _cut2 | | |
| Intercept | 15.701 | (1.417) |
| Equation 4 : _cut3 | | |
| Intercept | 16.869 | (1.425) |
| Equation 5 : _cut4 | | |
| Intercept | 17.990 | (1.433) |
| Equation 6 : _cut5 | | |
| Intercept | 19.568 | (1.446) |
| Equation 7 : rho | | |
| Intercept | 0.663 | (0.018) |

*Note: Omitted variables (baseline): source2 (labor income), male, edu1 (primary education completed).*
*lnhi100 stands for the ln of the reported household income + 1 Peseta; age2 is the square of age; own is the ratio of individual contribution to the couple/household income*

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