Do Private and Public Transfers Affect Life Satisfaction? Evidence from Romania [#]

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Abstract

This paper uses Romanian survey data to investigate the determinants of individual life satisfaction, with an emphasis on the role of public and private transfers received. A possible concern is that these transfers are unlikely to be exogenous to life satisfaction. We use a recursive simultaneous equations model to account both for this potential problem and for the fact that public transfers are themselves endogenous in the private transfer equation. We find that public and private transfers received do not matter for overall life satisfaction, whereas we find a crowding out effect of private transfers by the public ones. However, people are happier when giving private transfers. While people are not happier with the amount sent as gifts, happiness does increase with the amount sent as a loan or as an exchange. We interpret our findings as evidence that people are happier when they are able to be part of some self-enforcing mutual help arrangements, which are believed to be important in Romania.

Keywords: Happiness; Private transfers; Public transfers; Crowding-out; Romania

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1. Introduction

This paper studies the determinants of life satisfaction in Romania and, in particular, the effect of different income components on self-reported measures of well-being. We address the question: Do public and private transfers influence overall individual life satisfaction?

As expressed by Adam Smith (1776) and as introductory textbooks in economics teach us, "*It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest."* The *homo economicus* is expected to behave as a rational and self-interested actor who desires wealth, and thus, more income, through the receipt of either private or public transfers, should be associated with a higher level of life satisfaction. Another view, more in line with a hedonistic approach, is that life satisfaction comes from giving rather than receiving (Konow and Earley, 2008). An investigation of these conflicting views of whether (and how) making a private transfer affects life satisfaction is obviously important from a public policy perspective, as social allowances may affect private transfers differently depending on the private transfer motivation.

Romania offers an interesting scenario in this context. The political crisis during Ceausescu, followed by the dramatic collapse of the economy during the first years of transition, made Romania face a severe increase in poverty.[1] Public transfers were for many years chronically under-funded during Communism, and the first years of transition found them in a rapid process of disintegration. Also, while formal transfers are very limited, several authors have pointed to the importance of private transfers and social norms for the Romanian people (Mitrut and Nordblom, 2008; Amelina et al., 2004).

During the last two decades, economists have devoted a lot of attention to the determinants of subjective well-being (see Dolan et al., 2008, for a survey). With respect to the existing literature and to the best of our knowledge, our study is the first that focuses on the impact of private inter-household transfers on life satisfaction. In doing so, our contribution is closely linked to at least two lines of research.

The first one is the work on the determinants of life satisfaction.[2] While psychologists have long been interested in understanding human life satisfaction (Diener et al., 1999), the

[1] E.g., Romania experienced, on average, a negative growth rate from 1990 to 2002 as opposed to other transition countries within the region, e.g., the "first wave" EU accession countries (see World Bank, 2003).

[2] In this paper, we use the terms happiness, life satisfaction, and individual (self-reported) well-being interchangeably. Several papers have shown that these measures are highly correlated. One concern, especially among economists, is the potential problem when measuring individual utility using answers from subjective questions. In different cultures, different social norms may coexist and people may perceive happiness in different, subjective ways. However, many studies, both in economics and psychology, have shown that even

economists' interest in this topic started with the work of Easterlin (1974, 1995). He looked at the effect of income on happiness and stated the "paradox" of the increased real growth in Western countries during the last fifty years, without any corresponding increase in the reported levels of happiness. Some studies show that absolute income matters (Oswald, 1997), while Blanchflower and Oswald (2004) find support for the fact that both relative and absolute income matter. At the same time, there is a growing literature focusing on some other aspects closely linked to self-reported well-being, e.g., the effect of unemployment on overall life satisfaction (Clark and Oswald, 1994), and the effects of marriage, children, and health status. Some other studies have focused on the role of democratic institutions (Frey and Stutzer, 2000) and the role of social norms (Stutzer and Lalive, 2004) on individual well-being. Using self-reported happiness measures, Alesina et al. (2004) find that both Europeans and Americans are less happy when inequality is high.

The second strand of research closely linked to the present study is the literature on private transfers among households (see Laferrère and Wolff, 2006). In the earliest papers on this topic, inter-household transfers were assumed to be altruistically motivated, implying a crowding-out effect of the private contributions by government transfers (Barro, 1974; Becker, 1974). Although altruism is part of our human nature, empirical research has casted doubt on its power. Some authors have instead considered a form of impure altruism where donors increase their utility by the simple act of giving, referred to as the warm-glow motive (Andreoni, 1990). Cox (1987, 1990) suggests that transfers could be explained by self-interest concerns, e.g., financial transfers to children made in exchange for services received from them or that have to be reimbursed later. Private transfers may also allow households to share risk within networks of family and friends through mutual insurance (Foster and Rosenzweig, 2001; Fafchamps and Lund, 2003).

As private transfers are very common in Romania, one would expect them to have a large influence on subjective well-being. For instance, receiving transfers from others increases household resources, which should, in turn, increase life satisfaction. On the other hand, giving to others may also have an enhancing effect on life satisfaction if donors get some intrinsic utility from giving or if they care about the well-being of the recipients. Curiously, the link between private inter-household transfers and life satisfaction has not been studied

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though these concerns may be theoretically problematic, they are not warranted empirically (see further discussions in Alesina et al., 2004; Konow and Earley, 2008; Di Tella and MacCulloch, 2006).

before.[3] Our contribution is thus threefold. First, as Andrén and Martinsson (2006), we bring evidence on the determinants of happiness in Romania, but with a focus on the role of public and private transfers received. Second, we further investigate the interplay between these two types of transfers and the possibility of a crowding-out effect.[4] Third, we analyze the effect of transfers given on life satisfaction and disentangle the impact of transfers made for free/gifts and loan/exchange transfers.

In the empirical analysis, we rely on an unusually rich Romanian household survey conducted in 2003, and study the determinants of life satisfaction using the standard question: "*All things considered, how satisfied are you with your life as a whole these days?*" With respect to the main determinants of life satisfaction (such as income and unemployment status), our results are in line with other findings in the literature. When disentangling the impact of the different income components, we find that both non-transfer income and public transfers have a positive and significant impact on life satisfaction, while income from private transfers does not seem to matter. However, once taking into account the likely endogeneity of both private and public transfers in the life satisfaction regression and of public transfers in the private transfer regression, we no longer find a positive effect of public transfers on life satisfaction.

We show that people receive private transfers irrespective of their economic and demographic characteristics, which could be explained by some social norm motives (see also Mitrut and Nordblom, 2008). At the same time, respondents who benefit from more public transfers receive less private transfers, which is evidence of a crowding out effect. Interestingly, we find that people are happier when sending private transfers and that happiness increases with the amount given, meaning that *happiness comes from giving rather than from receiving*. Moreover, we show that while people are not happier with the amounts sent as (free) gifts, they do become happier with the amount of transfers given as a loan/exchange, a finding more in line with some kind of exchange or self-enforcing mutual help arrangements.

The rest of the paper is organized as follows. Section 2 briefly describes the Romanian context. Section 3 describes the data, and we use nonparametric regressions to study the link between satisfaction and income. Section 4 presents the main determinants of life and financial satisfaction in Romania. In Section 5, we focus on the role of private and public

[3] Meier and Stutzer (2008) analyze how volunteer work influences happiness in Germany. Also, Schwarze and Winkelmann (2005) and Wolff (2006) use questions on the subjective well-being of parents and children to study the existence of altruism between these two generations, but they do not take transfers (either private or public) into consideration in their empirical analyses.

[4] There are few empirical studies on the relevance of a crowding-out effect between private and public transfers. Cox and Jakubson (1995), Maitra and Ray (2003), and Jensen (2004) are interesting exceptions.

transfers received on individual life satisfaction and account for their potential endogeneity in the estimation. In Section 6, we study whether making private transfers to others enhance happiness. Section 7 concludes the paper.

2. The Romanian context

From a policy of full employment during Communism, the huge restructuring process after 1990 pushed many families of workers into long-term unemployment or early retirement. From 1990 to 1993, registered unemployment rose from 0% to 10.4%, while in 2002 the number of unemployed individuals reached almost 1 million (in a country of 22 million people), accounting for almost 12% of the labor force. The first years of transition found the public transfers in a rapid process of disintegration.[5] In 2001, Romania spent only 13.1% of its GDP on social protection, which was less than half of most EU countries.[6] Also, in 2001, almost three of every ten Romanians were poor, and one out of ten was extremely poor (World Bank, 2003).

Life satisfaction in Romania is thus expected to be strongly affected by the adverse economic conditions. In particular, Frey and Stutzer (2002) show that Romanians were on average less satisfied with their lives when compared to Western European countries or to the U.S. Also, Andrén and Martinsson (2006) note that one important facet of happiness in Romania is financial satisfaction. In this context, private monetary and in-kind transfers may provide an alternative to poverty and to the public social security system. In developing countries, family transfers are of vital importance for poor households for whom the marginal effect on daily expenditures is large (Adams, 2006; Maitra and Ray, 2003). Also in Bulgaria, family transfers reduce the poverty level of their recipients (Dimova and Wolff, 2008).

While formal transfers are very limited, private transfers in Romania are sizeable and very common. Amelina et al. (2004) find that gross private transfers received account for about 9 percent of the recipient household, while gross transfers given constitute more than 12 percent. Gift transfers are documented as a particularly important part of inter-household transactions, with about 90 percent of the households being involved in gift transfers. Gross gifts received account for almost 12 percent of the recipients' pre-transfer income, while gift

[5] In 2001, the average monthly pension for the retirees outside the agricultural sector was about 1.4 million lei (roughly 40 USD). The pensioners from the former agricultural cooperatives (i.e., CAP pension) had an even lower pension of only 271,650 lei (roughly 9 USD).

[6] Roughly 87% of Romanians receive at least one social protection transfer directly or indirectly, as household members. See the World Bank report (2003) for a more detailed account on the economic situation, especially after 1996.

giving (in absolute terms) is almost five times higher than, e.g., transfers through the Minimum Income Guarantee national assistance program. The importance of inter-household transfers in Romania is also documented through sociological and anthropological studies (Kligman, 1988). In addition, social norms are important, providing support for widespread networks of friends, kinships, and neighbors (Marginean et al., 2004).

3. Data and descriptive statistics

3.1 Data description

We use unusually rich household data collected by the World Bank for the year 2003, i.e., the Romanian Transfers and Social Capital Survey (TSCS). The TSCS is a nationally representative dataset covering 2,641 households from both urban and rural areas. The methodology and a description of the data are reported by Amelina et al. (2004). The survey contains detailed questions about inter-households transfers, both financial and in-kind, and reveal whether transfers given and received were gifts, loans, or exchange transfers. The data set also includes the standard demographic and socio-economic variables (including income).

When investigating the determinants of life satisfaction, we rely on the following self-reported information: "All things considered, how satisfied are you with your life as a whole these days?" The different answers range from 1 (completely dissatisfied) to 10 (completely satisfied). In the TSCS, each respondent is also asked about his/her financial satisfaction: "How satisfied are you with the financial situation of your household?" Again, the answers range from 1 (completely dissatisfied) to 10 (completely satisfied).

Two comments are in order. First, while we mainly focus on the life satisfaction determinants, we make use of both questions in order to compare the relative influence of transfers and private income on life and financial satisfaction. Second, while our measure of financial satisfaction is clearly at the household level, life satisfaction is more closely connected to the individual situation of the respondent. Nevertheless, in the case of altruism between spouses, a respondent's life satisfaction should be strongly correlated with his/her spouse's level of life satisfaction.[7]

When turning to the data, we exclude from the sample all observations with non-responses for some of the questions. This reduces the size of our sample to 2,294 observations. Figure 1 presents the distribution of the ordered measures associated with life and financial

[7] More generally, respondent life satisfaction is expected to depend on the level of satisfaction of the other family members living in the same household given that the respondent is altruistic.

satisfaction. More than 71% of the sample report an outcome of 5 or less in response to the life satisfaction question, and the percentage is even higher (almost 78%) for financial situation. In both cases, the proportion of very satisfied respondents (8 or more) is very low (about 3%).

Insert Figure 1

Table 1 presents the main explanatory variables used in the empirical part. Given the peak observed at the median (Figure 1), we choose to aggregate the answers into three main categories: low satisfaction (values of 4 or less), medium satisfaction (5), and high satisfaction (6 or higher).

Insert Table 1

According to Table 1 respondents living in couple are less likely to report low satisfaction, and we observe a kind of U-shaped profile for age. More educated individuals indicate higher life satisfaction, which is also the case for those who work. Conversely, unemployment strongly reduces life satisfaction: the proportion of unemployed is about 2.5 times higher in the low satisfaction group compared to in the high satisfaction group. Very poor or poor health has a similar effect. [8]

3.2 Non-parametric evidence on satisfaction and income

We begin with a non-parametric analysis to study the effect of income on life satisfaction. Figure 2 reports results from kernel-weighted local polynomial regressions of life and financial satisfaction separately on the log net income measured at the household level.[9]

We find an increasing profile for life satisfaction all over the income distribution (Figure 2A). This result is also clear in Table 1, since the respondents in the highest category of satisfaction are characterized by a mean level of income that is about 1.7 times higher than that of the respondents in the lowest category of happiness. A very similar profile is found when turning to financial satisfaction, although we note from Figure 2B somewhat of a dip in the upper part of the income distribution.

Insert Figure 2

[8] We only present the descriptive statistics for life satisfaction. The results are similar for financial satisfaction.
[9] We get very similar results when using a per capita measure of household income.

When considering the effect of the various components of income, we find a positive relationship between income from public transfers and life satisfaction. However, the differences in mean public transfers among the different life satisfaction categories are somewhat small. When it comes to the amounts of private transfers received and private transfers given, we have some interesting results. Both the mean amounts received and given are much higher in the highest life satisfaction category, although there are only small differences in the occurrence of transfers. That the highest receivers are happier than other respondents may be related to the increase in resources due to the receipt of private transfers. Conversely, that the most generous givers are happier than other respondents is a more puzzling finding that we will analyze further in the empirical part of this paper.

As in Table 1, we calculated the mean levels of resources as a function of the low, medium, and high categories of financial satisfaction.[10] All income components are higher for the highest satisfaction category. Financial satisfaction is also slightly more sensitive to public and private transfers received. It seems that the respondents who are more satisfied with their financial position make larger transfers. It could be that the richest respondents are able to afford helping other family members and relatives by giving them money or in-kind goods, or they might be involved in some reciprocity networks.

We also computed the weights of the various income components as functions of life satisfaction and financial satisfaction respectively (Figures A1 and A2 in Appendix).[11] The share of private transfers received seems to be slightly larger at lower levels of life satisfaction, although it remains quite important along the whole distribution. The effects concerning income from public transfers are less clear. On average, we note that the weight of public income tends to decrease across the distribution, although transfers are also high at the upper part of the distribution (levels 9 and 10). Poor people are expected to rely more on public transfers. On average, the private income component increases along the satisfaction distribution.

The results are even more pronounced for financial satisfaction. For those who are very satisfied, the weight of private transfers received is important. At the same time, these individuals have much lower amounts of public transfers, and the share of private income tends to increase. Finally, the weight of transfer given is also higher among those who are

[10] Results are available upon request.

[11] All calculations are performed at the aggregate level, meaning that we account for all individuals included at a given level of satisfaction.

very satisfied, consistent with previous evidence from Romania showing that mainly middle- and high-income households are involved in widespread networks of reciprocity (Mitrut and Nordblom, 2008). Respondents can thus give and receive a lot of money and in-kind goods at the same time.

4. The determinants of life satisfaction

The main aim of this section is to shed some light on the determinants of life satisfaction in Romania. Let Y_L^* be a latent, unobserved variable corresponding to the individual level of life satisfaction. This indicator is expected to depend linearly on a set of exogenous characteristics X_L such that:

$$Y_L^* = \beta_L' X_L + \varepsilon_L \quad (1)$$

By definition, we only observe the ordered indicator Y_L in the survey. We have $Y_L = 1$ when $-\infty \leq Y_L^* \leq \mu_{L1}$, $Y_L = 2$ when $\mu_{L1} < Y_L^* \leq \mu_{L2}, \ldots,$ and $Y_L = 10$ when $Y_L^* > \mu_{L9}$, where $\mu_{L1}, \ldots, \mu_{L9}$ are a set of threshold parameters to estimate. Under the normality assumption of the residual ε_L, the corresponding model is a standard ordered Probit specification.

The different covariates introduced in the regression are the standard used in this type of analysis. In particular, we account for gender, age (with a quadratic profile), living in couple, and household size, and include dummy variables for educational levels and health, activity status, net income, and living in an urban area. The definition of net income is the sum of private income, public transfers received, and private (inter-household) transfers received minus private transfers given. For the sake of robustness, we use two measures of income: one at the household and one at the individual level. As adult equivalence scales, we use the Romanian Equivalence Scale as defined by the World Bank.[12]

Column (1) of Table 2 presents the estimates of the ordered Probit model. Our main results are in line with other findings in the literature. On average, women seem happier than men, and so do individuals living in couple.[13]

Insert Table 2

[12] The Romanian Equivalence Scale assigns the following weights to the consumption of each family member: 1.0 for the first adult person, 0.8 for each additional adult person aged 15-61, 0.8 for each additional adult person aged 62 or older, 0.6 for each child aged 7-14, and 0.4 for each child aged 0-6.

[13] We do not know respondent marital status (i.e., divorced, widowed, or separated), since we only observe the relation to the household head. We should be cautious about the possible reverse causality when inferring conclusions about the individuals living in couple (married or not), since it may be the case that happier individuals are more likely to marry/be in a relationship, since they may be better at building relations.

We notice a U-shaped profile for age, suggesting that the least satisfied with their lives are the middle-aged cohorts. One explanation could be that these cohorts experience a high pressure to manage both their professional and personal lives (see Alesina et al., 2004). On the other hand, these are the cohorts that, after the fall of Communism, were highly exposed to the transition process. They initially formed high hopes, immediately after the Revolution – hopes that collapsed shortly after. As expected, we find a strong positive effect of education, which is likely to pick up a kind of permanent income effect and a negative impact of poor and very poor health conditions. Living in an urban area also has a negative influence on overall life satisfaction. Not surprisingly, unemployment decreases life satisfaction.[14]

We find a positive effect of income; i.e., money does increase life satisfaction. Similar conclusions have been reached by Andrén and Martinsson (2006) for Romania and by Alesina et al. (2004) for some European countries and for the U.S. Note that this effect is "net" of the role of family size. In Column (2) of Table 2, we account for the level of income per capita, and still get a positive coefficient. In the sequel, we only control for household income, as this covariate has been shown by Ravallion and Loskin (2001) to be a better predictor of individual life satisfaction than individual income.

Next, we try to understand whether the determinants of life and financial satisfaction are similar or not. For this purpose, we turn to a bivariate ordered Probit model. The first equation refers to life satisfaction and is similar to equation (1), while the second corresponds to the individual financial satisfaction, where Y_F^* is a latent variable expected to depend on a set of characteristics X_F. Hence, the bivariate model is:

$$\begin{cases} Y_L^* = \beta_L' X_L + \varepsilon_L \\ Y_F^* = \beta_F' X_F + \varepsilon_F \end{cases} \tag{2}$$

with $Y_L = j$ when $\mu_{Lj} < Y_L^* \leq \mu_{Lj+1}$ and $j = 1,...,10$, $Y_F = k$ when $\mu_{Fk} < Y_F^* \leq \mu_{Fk+1}$ and $k = 1,...,10$. We assume that the residuals ε_L and ε_F follow a bivariate normal distribution with unitary variances and an unknown coefficient correlation ρ to be estimated. For a given observation, the log likelihood may be expressed as:

$$\ln \ell_i = \sum_j \sum_k D_1(Y_{Li} = j, Y_{Fi} = k) \Pr(Y_{Li} = j, Y_{Fi} = k) \tag{3}$$

[14] Our data does not allow us to distinguish between long- and short-term unemployment, and voluntary and involuntary unemployment. Clark and Oswald (1994) show that these different types of unemployment have specific impacts on happiness.

with $\Pr(Y_{Li} = j, Y_{Fi} = k) = \Pr(\mu_{Lj} < Y_{Li}^{*} \leq \mu_{Lj+1}, \mu_{Fk} < Y_{Fi}^{*} \leq \mu_{Fk+1})$ and where $D_1(Y_{Li} = j, Y_{Fi} = k)$ is equal to one when $Y_{Li} = j$ and $Y_{Fi} = k$ and 0 otherwise. Each term $\Pr(Y_{Li} = j, Y_{Fi} = k)$ may be expressed as a sum of four terms involving the bivariate standard normal cumulative distribution function $\Phi_2(.)$. The coefficient ρ sheds light on the correlation between the unobservable ε_L and ε_F.

The results of the bivariate ordered Probit model are presented in Column (3) of Table 2. The coefficient of correlation between the two ordered equations is positive and highly significant.[15] This is not really surprising as the two measures of life satisfaction and financial satisfaction are both subjective and likely to be influenced by the same unobserved factors. Estimation of a recursive ordered model could be useful in this context, but it is difficult to find a suitable instrument influencing only financial satisfaction and not happiness (a condition necessary to secure identification). We use a simple Wald statistic to test the assumption of similar estimates for life satisfaction and financial satisfaction and we get a value of 37.9 for the Wald test, so we can reject the assumption of equal returns to the covariates in the two equations at the 5 percent level. Happiness is thus different from a purely economic measure of financial satisfaction.[16]

5. The role of private and public transfers received on life satisfaction

5.1 Results with exogenous transfers

Let us now study whether the different income components have a specific impact on life satisfaction. A very preliminary approach, based on the ordered specification presented before, is simply to introduce the three components of total income received into the life satisfaction regression. Note here that we choose to exclude amount of private transfers given, as it may be strongly related to amount of transfers received. The key issue is to know whether/how life satisfaction depends on the different sources of resources at the household

[15] This casts doubt on the relevance of including financial satisfaction in the happiness equation, as is done, e.g., by Andrén and Martinsson (2006).

[16] While the explanatory variables at first sight seem to have a similar influence, we can nevertheless observe some differences for a few covariates. In particular, the positive coefficient of living in couple is larger for financial satisfaction than for happiness. Having a spouse is expected to reduce the uncertainty of both current and future household resources; many studies have shown the importance of income pooling within couples (Bonke and Uldall-Poulsen, 2007). We also note larger effects for unemployment, the highest level of education, and net household income. As expected, respondents have more economic circumstances in mind and devote more weight to their economic situation when self-reporting their own financial satisfaction compared to their overall level of happiness.

level. The corresponding estimates are shown in Column (1) of Table 3. In what follows, we will only focus on the income components as all our previous results remain valid.

Insert Table 3

Recalling that the bulk of household resources is non-transfer income, we find a positive and significant coefficient for this covariate. As suggested by our descriptive statistics, richer respondents on average seem happier. The estimate associated with income from public transfers is also positive and statistically significant, the coefficient being in fact more important than the one for non-transfer income. A possible explanation consistent with this finding is that public transfers are more secure than other sources of private income. In particular, they are received regularly, usually on a monthly basis, thereby offering more financial security to the household. This could, in turn, translate into a higher level of satisfaction.[17]

While the coefficient associated with the amount of private transfers received is also positive, it is not significant at conventional levels. So, public and private transfers have different effects on happiness. Two comments are in order. First, there is much more uncertainty about the receipt of private transfers, which are usually made on an irregular basis, and recipients may have poor economic characteristics that prevent them from self-reporting a high value for life satisfaction. Second, it may be that the weight of this income component remains too low at the household level, making the income effect of this type of limited resource not sufficient to achieve a higher level of satisfaction.

At the same time, if private transfers are embedded in some reciprocity networks, then recipients also have to give money or in-kind goods to other people. All these transfers should reduce resources available for the household, and hence potentially have a negative income effect on happiness. To further investigate this point, we choose to introduce in our regression the amount of net private transfers instead of transfers received. As shown in Column 2 of Table 3, we find a negative coefficient for that explanatory variable, albeit it turns out to be insignificant.

We turn to a bivariate ordered Probit model in Column 3 in order to compare the estimates associated with life satisfaction and those associated with financial satisfaction. Our expectation is that the various income components should influence the latter indicator more

[17] This may not be true for the unemployed or other less well-off respondents if public transfers depend on other economic characteristics of the household. This sets up the endogeneity problem that we will examine next.

than the former. Again, we obtain a positive and significant coefficient of correlation between the two residuals. As shown in Table 3, we can reject the assumption that the determinants of both outcomes are of similar order. The three estimates associated with the income components are always larger in the financial satisfaction equation.

Nevertheless, the only significant difference is observed for the amount of public income, whose effect is much higher in the financial satisfaction equation than in the happiness equation. Such a result may be due to the fact that the receipt of public income strongly reduces uncertainty about resources, at least when the public transfers are permanent (like pensions). Note that there is a trade-off here. With more public transfers, the respondent is better-off and this should increase his/her life satisfaction. At the same time, receiving public transfers (at least for some transfers like unemployment benefits or social allowances) is also a signal that the respondent is in a poor situation, which is associated with a lower value for life satisfaction. The private and public transfer components of income may thus be not exogenous.

5.2 Endogeneity issue

To the best of our knowledge, Maitra and Ray (2003) on South Africa is the only study that has examined the behavioral and welfare impacts of both public and private transfers allowing for endogeneity of resource variables. These authors focus on household expenditure patterns, not on life satisfaction.

Several arguments help us understand the complex interrelationship between the different income components. First, virtually all models of family transfers predict that the receipt of private transfers depends on household non-transfer income. Under altruism, those in a poor economic situation should receive more money from donors, while the relation can be either positive or negative under exchange (Cox, 1987). Those with limited resources may have more time to care for their parents and thus should receive more money in exchange, but parents may also be ready to pay a higher price for attention and services from rich children. Second, it is well known since Barro (1974) that under the assumption of dynastic intergenerational altruism, private transfers are crowded out by public transfers.[18] Again, a different pattern may occur under exchange, with the possibility of a crowding-in effect (Cox and Jakubson, 1995).

[18] A respondent who receives one additional unit of money through public support should receive one unit of money less through private help if the donor is perfectly altruistic.

Therefore, we need to account for potential endogeneity of private and public support in the life satisfaction equation. At the same time, we also need to account for the fact the public transfers may be endogenous in the private transfer equation. In what follows, we try to control for these two sources of endogeneity, but we choose to neglect the potential endogeneity of non-transfer income. In all empirical studies on family transfers (see Laferrère and Wolff, 2006), non-transfer income is considered exogenous in the private transfer equation, one exception being Maitra and Ray (2003).

When estimating Engel curves, these authors study whether the different expenditure shares are influenced by the endogeneized income components (non-transfer income, private, and public transfers). An important feature is that they rely on a linear specification since they use a 3SLS model. The implicit assumption is that all households receive both private and public transfers since the different dependent variables are treated as continuous. However, although the proportion of respondents involved in private transfers remains high in Romania (in fact much higher than in other developed or even transitional economies), this is not a realistic assumption. For instance, the proportion of respondents not receiving private transfers amounts to 41.4% and the figure for public transfers is 13.4%. Clearly, taking censoring into account makes a difference.

Thus, we estimate a recursive model comprising the three following equations: one Tobit equation for public transfers, one Tobit equation for private transfers with public transfers as an additional covariate, and one ordered Probit equation for life satisfaction with public and private transfers as additional regressors. This system defines a recursive model:

$$\begin{cases} T_{pu}^{*} = \beta_{pu}' X_{pu} + \varepsilon_{pu} \\ T_{pr}^{*} = \beta_{pr}' X_{pr} + \delta_{pu} T_{pu} + \varepsilon_{pr} \\ Y_{L}^{*} = \beta_{L}' X_{L} + \gamma_{pu} T_{pu} + \gamma_{pr} T_{pr} + \varepsilon_{L} \end{cases} \quad (4)$$

with $T_{pu} = \max(0, T_{pu}^{*})$, $T_{pr} = \max(0, T_{pr}^{*})$ and $Y_L = j$ when $\mu_{Lj} < Y_L^{*} \leq \mu_{Lj+1}$ ($j = 1,...,10$). The set of threshold values $\mu_{L1},...,\mu_{L10}$ has to be estimated jointly with the different coefficients.

Assume first that the residuals ε_{pu}, ε_{pr}, and ε_{L} follow a trivariate normal distribution, but are uncorrelated. Then the simultaneous model defined by (4) is a recursive one, but endogeneity of transfers is not a problem. The different estimates with a joint estimation will be very similar to those obtained through an estimation of three separate equations. Next, if we relax the assumption of null correlations among the residuals, we get a recursive model where

endogeneity is explicitly taken into account. A central issue when estimating such models is identification.

In a setting of a multiple equations Probit model with endogenous dummy regressors, it has been shown by Wilde (2000) that exclusion restrictions on the exogenous regressors are not necessary. This issue is rather similar in our context and a first source of identification stems from the non-linearity of the various equations. However, the model remains only weakly identified, so we have attempted to rely on relevant exclusion restrictions to secure identification. Unfortunately, this task remains somewhat difficult as it is hard to find instruments with the desirable properties. We choose to proceed in the following way.

First we include in the public transfer equation the age-specific composition of the household. This is expected to greatly influence the amount of the various allowances. In the same way, we include a dummy variable if the respondent is retired, as it influences the receipt of pension. Note that public transfers also depend on non-transfer income of the household. Secondly, private transfers are expected to depend on public transfers; as mentioned, a negative relationship is expected under altruism. To identify this equation, we include in the list of covariates the number of potential informal lenders, which is defined as the number of people the respondent could turn to if he/she suddenly needed a substantial amount of money (3-4 million lei).[19] The number of potential lenders is expected to increase the amount of private transfers received by the household. The above specification has been estimated by a maximum likelihood method. Specifically, we estimate the model twice. First, in Column (1) of Table 4 we fix the difference correlations to zero. We thus have a joint estimation of the three equations, but endogeneity does not matter. Then, in Column (2) we relax the assumption of null correlations and the various estimates are net of endogeneity bias.

We focus here only on the determinants of life satisfaction and more precisely we comment on the effect of the income variables. Under the assumption of exogenous private and public transfers, the estimates in the last column of specification (1) show that life satisfaction increases significantly both with non-transfer income and public transfers. As expected, these results are very similar to those described in Table 3. Income from private transfers received also has a positive influence, but the coefficient is not significant. Once the issue of endogeneity is taken into account (see Column 2), we only observe a positive and significant

[19] In 2002, 3-4 million lei was equivalent to about 92-122 USD. This is quite a high amount. In fact, it is almost the median monthly income for the surveyed households.

relationship between non-transfer income and life satisfaction. Neither the amount of private transfers received nor the amount of public transfers received now influences life satisfaction. Finally, it should be noted that we get very similar results when estimating the recursive model with the financial satisfaction instead of the life satisfaction measure.[20]

5.3 Transfers and the crowding-out effect

Let us now have a closer look at the determinants of public and private transfers (Table 4). Concerning public transfers, the amount of allowances received increases with the number of persons living in the household, but the effect is much stronger for the older age group (62+), which is due to inclusion of pensions in public transfers. Transfers are significantly lower when the household head is working or unemployed, but much higher when the head is retired. As expected, they are negatively related to the household non-transfer income.

When turning to private transfers, we first note that they remain hard to explain. Covariates like gender, living in couple, household size, education, and activity status are not significant. One explanation is that private transfers in Romania are part of some social norms; i.e., they do not really depend on household characteristics.[21] This implies that people receive (and certainly give) some money or in-kind from (to) other people regardless of their own demographic and economic situation. According to the data, the number of potential informal lenders is positively correlated with the amount of transfer received, and this amount is also larger when the respondent lives in an urban area.

Insert Table 4

A puzzling finding in Table 4 is the positive, albeit insignificant, relationship that we obtain between the amount of private transfers received (estimated through a Tobit equation) and the amount of non-transfer income. The fact that private transfers received are not influenced by the amount of non-transfer income may, again, be consistent with a model where social norms are important, while it casts doubt on the relevance of altruism or exchange. People may need

[20] Having more non-transfer income increases the level of financial satisfaction. The coefficients associated with public and private transfers are not statistically significant. Nevertheless, with respect to the assumption of exogeneity, we observe a higher value for the private transfer coefficient (0.306 instead of 0.110) in the financial satisfaction equation. This suggests that private transfers may help reduce poverty and, thus, increase satisfaction related to economic conditions (results available upon request).

[21] Another theoretical explanation that would be consistent with this finding is a family loan model, where people first borrow money from other family members and then have to honor (and repay) their debts regardless of their economic situation (see the discussion in Laferrère and Wolff, 2006). Nevertheless, in the Romanian context, the widespread diffusion of private transfers to and from other family members, relatives, and neighbors, casts doubt on the relevance of an intertemporal exchange.

to send private transfers independently of their own financial situation. In that case, they are also expected to receive more money from others due to norms of reciprocity.[22] Under the assumption of exogeneity, we at the same time observe a negative coefficient for public transfers, although this coefficient remains insignificant.

As shown in Column (2) of Table 4, once endogeneity is taken into account, we obtain a positive and significant correlation between the residuals of the equations of the two types of transfers. Two comments are in order. Firstly, the various estimates in the public transfers' equation remain fairly robust compared to in Column (1). Secondly, in the private transfers' equation, we now find a negative and significant coefficient for the amount of public transfers. So, in Romania, respondents who benefit from more public transfers receive less private transfers from others. This is evidence of a crowding-out effect.

As this effect is important from a public policy viewpoint, we choose to further study the relationship between private and public transfers. Hence we estimate a simultaneous model with only the two equations for private and public transfers, respectively. This allows us to implement standard instrumental variable regressions and to test the relevance of the instruments. We rely on a 2SLS model and do as if our dependent variables were continuous. Our results (available upon request) show that our exclusion restrictions are reliable. The instruments have the desirable properties since they have a significant effect and a large contribution to the R^2 in the public transfers' equation, while they are not significant in the private transfer equation.[23]

Assuming that there is no censoring among observations (2SLS), we get a negative, yet not significant, value of the instrumented public transfer amount in the private transfer equation. Further investigation shows that it is important to account for the fact that not all respondents receive such transfers. Once properly taking into account the fact that the transfer equations have to be estimated through the use of Tobit models, we get a negative and significant coefficient of the public transfer amount.

If one believes that social norms are important and, accordingly, if it is because of norms that people send private transfers, the crowding out effect that we find may seem a bit puzzling. In a society where social norms matter, private transfers should strengthen the social ties and crowding out should be non-existent. One way of interpreting our result is related to the way

[22] A drawback of our analysis is that we do not have simultaneous information about the recipient and the donor in the transfers. See the discussion in Altonji et al. (1997).

[23] The Sargan statistic associated with the overidentification test of all instruments is equal to 0.852 and the probability value is 93.1% (with 4 degrees of freedom).

private transfers are defined in our data, since they include gifts, in-kinds exchanges, payments, and loans. While private transfers in the form of gifts may be more related to norms (Mitrut and Nordblom, 2008), informal loans, payments, and direct exchange transfers may be more related to the lack of public transfers and some self-enforcing mutual help arrangements among households.

6. Do private transfers *given* enhance life satisfaction?

We finally attempt to understand whether life satisfaction is affected by *giving* rather than by *receiving* private transfers. This question has not been explored so far in the literature on subjective well-being.[24] Before turning to the data, let us briefly consider different ways in which giving may influence life satisfaction.

One is related to the fact that giving (money) reduces household income. Since the level of satisfaction increases in the net amount of resources, giving should decrease life satisfaction. On the other hand, giving money or in-kind goods may well influence life satisfaction in the opposite way. This is, for instance, the case when the donor is motivated by altruism. Then the loss in donor well-being is more than compensated for by the increase in well-being stemming from the recipient's higher level of satisfaction. Along these lines, Schwarze and Winkelmann (2005) for Germany and Wolff (2006) for France show that the levels of well-being of parents are significantly correlated with those of their children.[25] An increase in a child's happiness through increased resources has a positive effect on his/her parent's happiness.

Another way in which giving may influence life satisfaction is related to the warm-glow motive described by Andreoni (1990, 2006) according to which one should derive intrinsic utility (which increases life satisfaction) from giving money to others. Also, there may be social norms associated with gift giving, and complying with these may increase the donor's utility (Mitrut and Nordblom, 2008). Finally, under the exchange motive the respondent is expected to gain additional satisfaction from giving to others since he/she will then receive other transfers from other people. For instance, in Cox (1987) the parent increases his/her level of satisfaction by receiving services and attention from his/her child in exchange for a

[24] One exception is Konow and Earley (2008) who explore in an experimental setting whether giving money increases happiness. Also, recent evidence shows that volunteering makes people happier (Meier and Stutzer, 2008). However, in contrast to these authors, we focus here on private inter-household transfers.

[25] Estimating the interaction between the levels of well-being of a parent and his/her child provides a measure of the degree of parental altruism. The difficulty here is gaining information about the levels of satisfaction of two generations. Unfortunately, each respondent was only asked about his/her own happiness in our data.

monetary transfer. A difficulty here is that the exchange (and thus the rise in happiness) can be delayed, as in the loan model of Cox (1990) where parents lend money to their children and are reimbursed later at a family interest rate above the market one.

We begin our investigation in the following way. We estimate our ordered Probit equation for life satisfaction adding an explanatory variable related to in-kind and financial transfers made to others. In the regression, we control for the total amount of income received, which is the sum of non-transfer income and public and private transfers received from others.[26] The results are presented in Table 5. In Column (1) we introduce a dummy variable that is equal to one if the respondent had made a transfer (either monetary or in-kind) to other people. We find a positive and significant coefficient for this variable meaning that respondents are happier when they give money or goods to other people. We get a similar result in Column (2), where we introduce the *amount* of transfers given. This is a new finding with respect to the existing literature on happiness. However, this private transfer-enhancing effect tells us little about the underlying motive behind private transfers.

Insert Table 5

To interpret our results further, we choose to divide the amount given according to the self-reported information given by the respondents who, for each transfer, stated whether it was a gift/for free, a loan or an exchange of similar services, or an exchange defined as a situation where the respondent receives something different than what he/she gave (i.e., exchange here refers more to an a priori binding agreement). Although we acknowledge that this may be quite ad-hoc, we choose to make a distinction between gifts (more in line with e.g. altruism and social norm motives) and loan-exchange transfers (more in line with self-interest motives, i.e., mutual help arrangements), since we believe it would be interesting to know whether these types of transfers have the same influence on life satisfaction.

We estimate a bivariate ordered Probit model with life satisfaction and financial satisfaction as dependent variables. As shown in Column 3 of Table 5, only the amount of loan-exchange transfers increases the level of well-being of the recipient in the life satisfaction equation at the 1 percent level, while the estimate associated with gifts is not significant at conventional

[26] For the sake of robustness, we also considered a measure of income defined as the sum of non-transfer income and public transfers only (without private transfers received), but found no effect on our conclusions.

levels.[27] This finding may be linked with the idea that self-interested households form some self-enforcing mutual help arrangements and that Romanians (probably also due to different social norms) may feel happier when they are able to participate in these arrangements.[28]

From Table 5, we also note that the self-reported financial satisfaction increased with both types of private transfers, i.e., gifts and loans-exchange. This is a bit more puzzling, as giving reduces the amount of available resources for the household. There are two ways of interpreting this result. On the one hand, people who make gifts or loans can afford to do so and hence are in a much better financial satisfaction. On the other hand, exchange-motivated transfers favor the receipt of transfers from other households, and gifts made for free may also promote reciprocity.

A concern in our results is that we may have some endogeneity problems. Nevertheless, it is difficult to find good instruments. One could for instance consider participation with money or volunteer work in community projects. Working or giving money should be highly correlated to the decision of private transfers to other households, but at the same time, contributions to the community are also likely to enhance life satisfaction if the donors are motivated by altruistic or social norm considerations. Also, the data does not allow us to control for unobserved heterogeneity through the use of fixed effects.

Finally, we have a descriptive look at the relation between life satisfaction and the identity of those receiving money or goods from the respondent. What we have in mind here is the Hamilton's rule, according to which an individual will value distinctly the fitness of a relative depending on his/her relationship with that particular relative (see Bergstrom, 1996).[29] We neglect the trade-off between gifts and loans and just compute the mean life satisfaction as a function of the different recipients. The mean value for life satisfaction, which is always higher when giving, is equal to 4.73 when the respondents provided money or goods to parents, 4.59 to children, 4.66 to siblings, 4.66 to other family members, and 4.52 to non-family. All these figures are rather close, suggesting that respondents do not really gain more utility when giving to closer relatives. We reach a similar conclusion with an econometric analysis. When introducing specific dummies related to each type of recipient in the regression, we find no significant differences among the various estimates. This result does

[27] The level of significance is 11.8% for the amount of gifts (for free). A Wald test indicates that the coefficients associated with gifts and exchange amounts of transfers are not significantly different, with a statistic of 1.48 and a probability of 22.45%.

[28] Since it could be the case that the amount or size of private transfers given is not important, we instead include a dummy for gifts given and a dummy for loan/exchange transfer given. The results are consistent with the above.

[29] The coefficient of relatedness would for instance be higher for children than for grandchildren.

not allow us to reject the possibility of the Andreoni warm glow motive (i.e., an additional satisfaction related to the act of giving). At the same time, such a pattern is again more consistent with a social norm explanation to private transfers or with the fact that people get happier from taking part in some self-enforcing mutual help arrangements than with an altruistic motive.

7. Conclusions

Using original household data, this paper has attempted to understand the determinants of life satisfaction in Romania, and in particular the effect of private and public transfers on individual self-reported well-being measures.

We find new results with respect to the existing literature on life satisfaction. When treated as exogenous, we find that both public transfers and non-transfer income have a positive and significant impact on life satisfaction, while income from private transfers does not seem to matter. While one could interpret the positive and significant impact of public transfers as, e.g., evidence that since these transfers are received regularly they could offer a sentiment of security, one difficulty is that both private and public transfers are unlikely to be exogenous in the life satisfaction regression. At the same time, the amount of public transfers is endogenous in the private transfer regression. Once we control for these endogeneity problems, we no longer find a positive effect of public transfers on life satisfaction.

We also find that people receive private transfers irrespective of their economical and demographical characteristics, which may be in line with a transfer motive related to social norms. However, we *do* find evidence of a *crowding-out* effect, since respondents who benefit from more public transfers receive less private transfers. As a policy implication, if the public transfers in Romania, e.g., social security, would be increased from today's very low level, then the poor elderly would definitely benefit. In a setting where social norms are important, an increase in permanent income would definitely give people the opportunity to stay involved in reciprocal transfer networks. Of course, the government transfers would probably be even more important in a more individualistic setting where exchange, norms, and reciprocity transfers are not important.

Finally, we find evidence that people are happier when sending private transfers and also that life satisfaction increases with the amount given. This is the first paper that isolates the impact of private transfers from other sources of income. We find that people are not happier with the amount sent as a gift, but that they do become happier with the amount of transfers given as a loan/exchange. This may be linked with the idea that self-interested households form some

self-enforcing mutual help arrangements and that Romanians (probably also due to different social norms) may feel happier when they are able to participate in these arrangements.

The evidence presented here calls for a deeper investigation of the mechanisms through which public and private transfers enhance life satisfaction. Concerning transfers received, their effects may depend on the economic position of the respondent. Presumably they make poor people, for whom such transfers are most often a necessity for survival, happier. Also, having panel data would be useful to control for unobserved heterogeneity at the individual level. Finally, it would be useful to study the relationship between life satisfaction and the decision to make a transfer more closely, since it could be helpful in assessing the relevance of the warm-glow motive. All these issues are left for future research.

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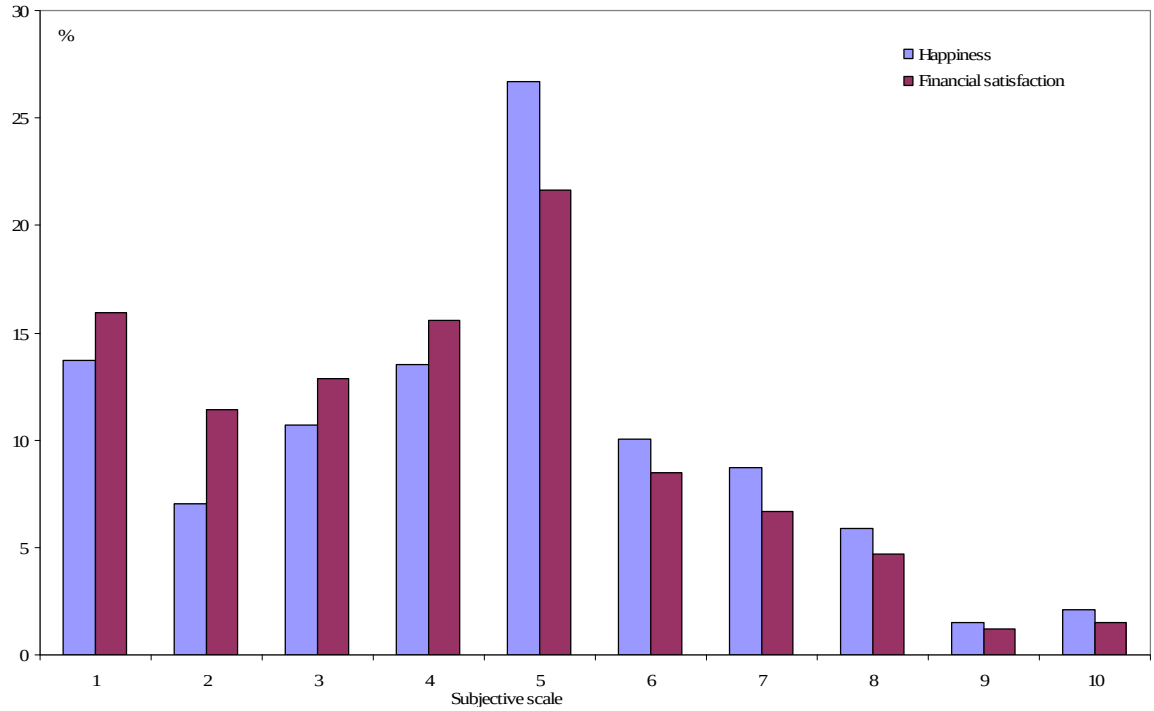
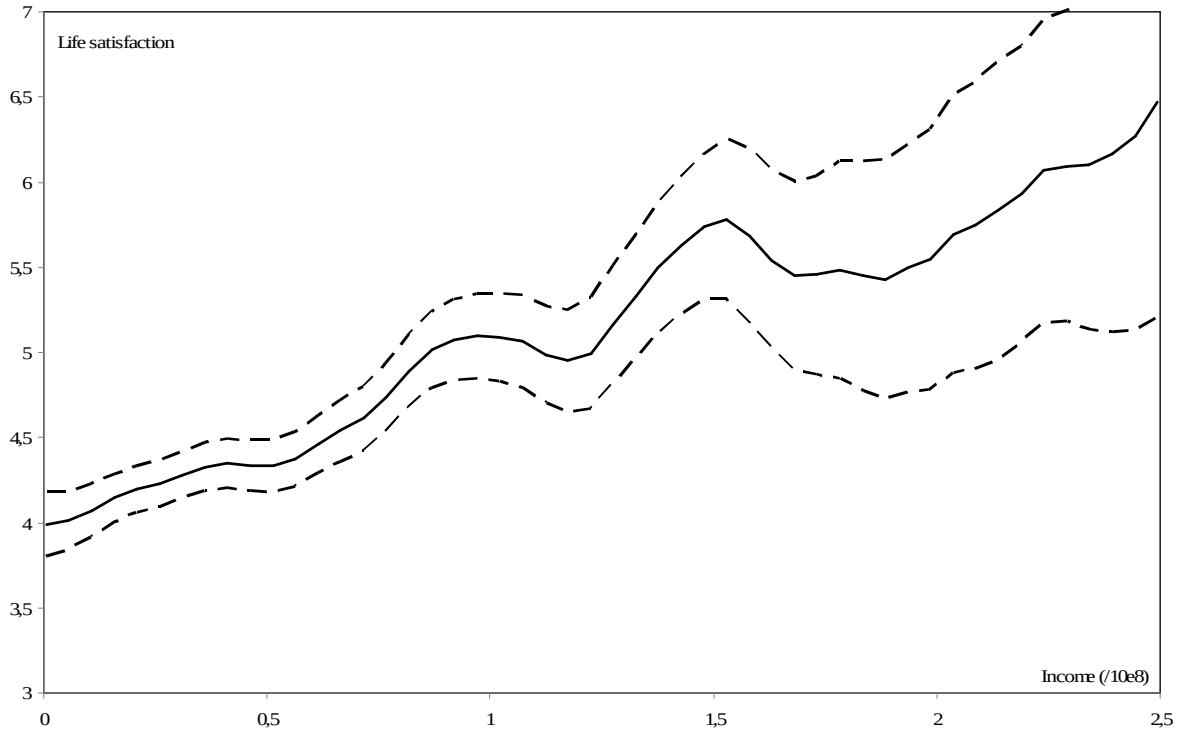
Figure 1. The distribution of life satisfaction and financial satisfaction



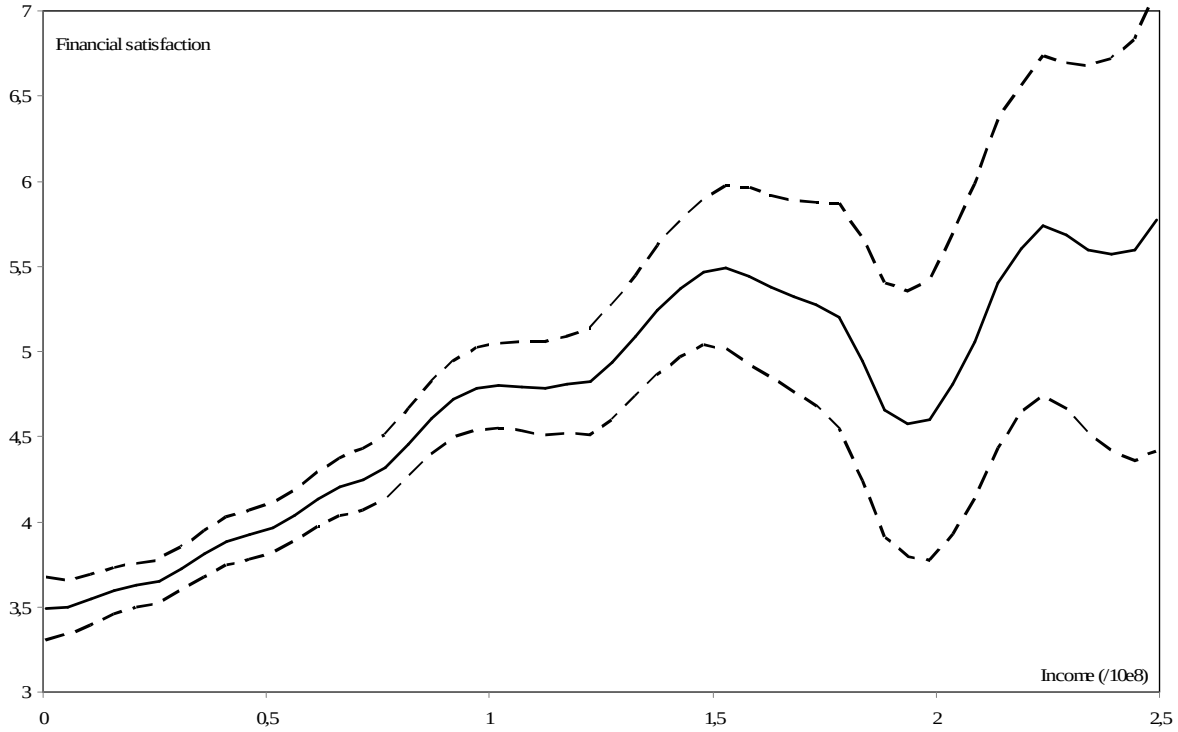
Source : Romanian TSCS, 2003.

Figure 2. Nonparametric regression of satisfaction on log net income

A. Life satisfaction



B. Financial satisfaction



Source : Romanian TSCS, 2003.
Note: Confidence intervals are calculated at the 95 percent level.

Table 1. Descriptive statistics of the sample

Variables		Life satisfaction			
		Low	Medium	High	All
Head female		0.508	0.525	0.492	0.508
Age		54.101	50.843	52.208	52.696
In couple		0.661	0.746	0.733	0.704
No. of children (0-14)		0.425	0.499	0.427	0.446
No. of adults (15-61)		1.809	1.977	1.866	1.870
No. of elderly (62+)		0.682	0.573	0.644	0.642
Adult equivalent household size		3.211	3.251	3.162	3.208
Education	No education or primary	0.167	0.095	0.102	0.129
	Secondary	0.288	0.277	0.207	0.262
	Gymnasium	0.174	0.179	0.127	0.162
	High school/Vocational school	0.202	0.237	0.252	0.225
	Post high school	0.100	0.108	0.159	0.119
	University or more	0.070	0.104	0.154	0.103
Health	Very good or good	0.416	0.577	0.736	0.550
	Poor	0.404	0.346	0.222	0.337
	Very poor	0.180	0.077	0.042	0.113
Status	Working	0.318	0.401	0.429	0.371
	Unemployed	0.053	0.041	0.022	0.041
	Retired	0.456	0.398	0.451	0.439
	Other	0.173	0.160	0.098	0.149
Total net income (/100000)		496.288	612.849	856.964	629.318
Non-transfer income (/100000)		304.870	426.679	662.385	438.409
Public income (/100000)		179.131	186.106	198.377	186.432
Private transfer received		0.581	0.577	0.599	0.585
Amount of transfer received (/100000)		58.071	57.941	94.094	68.212
Private transfer given		0.820	0.868	0.856	0.843
Amount of transfer given		45.783	57.877	97.892	63.734
Live in an urban area		0.614	0.592	0.614	0.608
Number of observations		1,033	613	648	2,294

Source: Romanian TSCS survey, 2003 (our own calculations).

Table 2. The determinants of life satisfaction and financial satisfaction

Variables		(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	(3) Financial satisfaction
Head female		0.099**	0.100**	0.098**	0.120**
		(0.048)	(0.048)	(0.048)	(0.048)
Age		-0.031***	-0.031***	-0.031***	-0.037***
		(0.009)	(0.009)	(0.009)	(0.009)
Age squared (/100)		0.037***	0.036***	0.037***	0.039***
		(0.009)	(0.009)	(0.009)	(0.009)
In couple		0.143***	0.148***	0.146***	0.294***
		(0.055)	(0.055)	(0.055)	(0.056)
Household size		-0.005	0.001	-0.006	-0.008
		(0.014)	(0.014)	(0.014)	(0.014)
Education	Secondary	0.101	0.100	0.099	0.099
(ref : no education or primary)		(0.077)	(0.077)	(0.077)	(0.078)
	Gymnasium	0.160*	0.161*	0.160*	0.140
		(0.092)	(0.092)	(0.092)	(0.093)
	High school/Vocational school	0.265***	0.270***	0.264***	0.231**
		(0.090)	(0.090)	(0.090)	(0.090)
	Post high school	0.441***	0.449***	0.442***	0.448***
		(0.100)	(0.100)	(0.100)	(0.100)
	University or more	0.463***	0.483***	0.456***	0.559***
		(0.106)	(0.106)	(0.106)	(0.106)
Health	Poor	-0.499***	-0.500***	-0.503***	-0.459***
(ref : very good or good)		(0.052)	(0.052)	(0.052)	(0.052)
	Very poor	-0.959***	-0.959***	-0.961***	-0.883***
		(0.078)	(0.078)	(0.078)	(0.078)
Working		0.031	0.038	0.036	-0.028
		(0.060)	(0.060)	(0.060)	(0.061)
Unemployed		-0.281**	-0.286**	-0.281**	-0.359***
		(0.120)	(0.120)	(0.121)	(0.122)
Net income (/10^e8)		0.062***		0.062***	0.073***
		(0.177)		(0.018)	(0.018)
Net income per capita (/10^e8)			0.086**		
			(0.340)		
Living in an urban area		-0.269***	-0.263***	-0.278***	-0.206***
		(0.052)	(0.052)	(0.052)	(0.052)
Coefficient of correlation				0.700 (0.012)	
Test: [happiness coef = financial coef]				$Chi^2(22)=37.91$; prob=0.0187	
Number of observations		2,294	2,294	2,294	
Log likelihood		-4585.6	-4588.5	-8483.0	

Source: Our own calculations using the 2003 TSCS survey.

(1) and (2) are ordered Probit models, (3) is a bivariate ordered Probit model. Standard errors are in parentheses, significance levels equal to 1% (***), 5% (**), and 10% (*). Each regression also includes a set of regional dummies and a set of threshold levels.

Table 3. Life satisfaction and financial satisfaction, with exogenous income components

Variables	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	(3) Financial satisfaction
Head female	0.107**	0.104**	0.106**	0.136***
	(0.048)	(0.048)	(0.048)	(0.048)
Age	-0.033***	-0.035***	-0.033***	-0.040***
	(0.009)	(0.009)	(0.009)	(0.009)
Age squared (/100)	0.037***	0.039***	0.038***	0.040***
	(0.009)	(0.009)	(0.009)	(0.009)
In couple	0.137**	0.134**	0.140**	0.285***
	(0.056)	(0.056)	(0.056)	(0.056)
Household size	-0.014	-0.014	-0.015	-0.026*
	(0.015)	(0.015)	(0.015)	(0.015)
Education Secondary	0.087	0.086	0.085	0.073
(ref : no education or primary)	(0.078)	(0.078)	(0.078)	(0.078)
Gymnasium	0.140	0.134	0.139	0.102
	(0.093)	(0.093)	(0.093)	(0.093)
High school/Vocational school	0.235***	0.235***	0.234**	0.177*
	(0.091)	(0.091)	(0.091)	(0.091)
Post high school	0.407***	0.406***	0.407***	0.386***
	(0.102)	(0.102)	(0.102)	(0.102)
University or more	0.403***	0.407***	0.396***	0.453***
	(0.110)	(0.110)	(0.110)	(0.110)
Health Poor	-0.498***	-0.501***	-0.502***	-0.456***
(ref : very good or good)	(0.052)	(0.052)	(0.052)	(0.052)
Very poor	-0.954***	-0.955***	-0.955***	-0.875***
	(0.078)	(0.078)	(0.078)	(0.078)
Working	0.069	0.068	0.074	0.047
	(0.065)	(0.065)	(0.065)	(0.065)
Unemployed	-0.236*	-0.234*	-0.236*	-0.276**
	(0.123)	(0.123)	(0.123)	(0.124)
Non-transfer income (/10^e8)	0.069***	0.068***	0.069***	0.080***
	(0.018)	(0.018)	(0.018)	(0.018)
Public transfers received (/10^e8)	0.309**	0.306**	0.310**	0.535***
	(0.142)	(0.142)	(0.142)	(0.142)
Private transfers received (/10^e8)	0.067		0.067	0.111
	(0.077)		(0.077)	(0.077)
Net transfer (/10e8)		-0.091		
		(0.075)		
Living in an urban area	-0.281***	-0.276***	-0.290***	-0.228***
	(0.053)	(0.053)	(0.053)	(0.053)
Coefficient of correlation			0.699 (0.012)	
Test:[life coefs = financial coefs]			$Chi^2(24)=42.02$; prob=0.0128	
Number of observations	2,294	2,294	2,294	
Log likelihood	-4582.3	-4582.0	-8474.6	

Source: our own calculations, using the TSCS survey.

(1) and (2) are ordered Probit model, (3) is a bivariate ordered Probit model. Standard errors are in parentheses, significance levels equal to 1% (***), 5% (**), and 10% (*). Each regression also includes a set of regional dummies and a set of threshold levels.

Table 4. Simultaneous model of public transfers, private transfers and life satisfaction

Variables	(1)			(2)		
	Public tr.	Private tr.	Happiness	Public tr.	Private tr.	Happiness
Constant	-0.283***	0.213*		-0.283***	0.142	
	(0.047)	(0.128)		(0.047)	(0.128)	
Head female	-0.018**	-0.011	0.107**	-0.018**	-0.032	0.090*
	(0.008)	(0.026)	(0.050)	(0.008)	(0.027)	(0.052)
Age	0.010***	-0.014***	-0.033***	0.010***	-0.011***	-0.030***
	(0.002)	(0.004)	(0.009)	(0.002)	(0.004)	(0.010)
Age squared (/100)	-0.010***	0.010**	0.037***	-0.010***	0.009**	0.036***
	(0.001)	(0.004)	(0.009)	(0.001)	(0.004)	(0.009)
Number of persons 0-6	0.034***			0.034***		
	(0.010)			(0.010)		
Number of persons 7-14	0.032***			0.031***		
	(0.008)			(0.007)		
Number of persons 15-61	0.037***			0.038***		
	(0.003)			(0.003)		
Number of persons >61	0.124***			0.124***		
	(0.006)			(0.006)		
In couple		-0.039	0.136**		-0.046*	0.131**
		(0.026)	(0.056)		(0.026)	(0.057)
Household size		0.001	-0.014		0.016	-0.003
		(0.009)	(0.015)		(0.010)	(0.018)
Education Secondary	0.060***	0.019	0.087	0.060***	0.047	0.110
(ref : no education or primary)	(0.015)	(0.046)	(0.075)	(0.015)	(0.047)	(0.078)
Gymnasium	0.092***	-0.016	0.140	0.093***	0.027	0.172*
	(0.017)	(0.061)	(0.092)	(0.017)	(0.063)	(0.096)
High school/Vocational school	0.120***	0.031	0.235***	0.120***	0.087	0.276***
	(0.017)	(0.053)	(0.090)	(0.017)	(0.056)	(0.098)
Post high school	0.137***	0.008	0.407***	0.138***	0.077	0.455***
	(0.017)	(0.062)	(0.099)	(0.017)	(0.067)	(0.109)
University or more	0.225***	0.085	0.403***	0.227***	0.188**	0.479***
	(0.017)	(0.063)	(0.114)	(0.017)	(0.074)	(0.137)
Health Poor	-0.001	-0.034	-0.497***	-0.001	-0.035	-0.498***
(ref : very good or good)	(0.009)	(0.031)	(0.052)	(0.009)	(0.031)	(0.052)
Very poor	-0.018	-0.008	-0.954***	-0.018	-0.018	-0.955***
	(0.013)	(0.043)	(0.075)	(0.013)	(0.043)	(0.075)
Working	-0.117***	0.006	0.069	-0.115***	-0.069	0.007
	(0.013)	(0.035)	(0.067)	(0.013)	(0.044)	(0.087)
Unemployed	-0.045**	0.002	-0.236*	-0.047**	-0.074	-0.298**
	(0.022)	(0.059)	(0.136)	(0.022)	(0.064)	(0.146)
Retired	0.153***			0.151***		
	(0.013)			(0.013)		
Non-transfer income (/10^{e}8)	-0.050***	0.011	0.069***	-0.055***	0.005	0.067***
	(0.005)	(0.011)	(0.021)	(0.004)	(0.015)	(0.021)
Public transfers received (/10^{e}8)		-0.066	0.309**		-0.510***	-0.055
		(0.076)	(0.156)		(0.185)	(0.348)
Private transfers income (/10^{e}8)			0.064			0.072
			(0.129)			(0.215)
Number of potential informal lenders		0.005***			0.004**	
		(0.002)			(0.002)	
Living in an urban area	0.048***	0.070**	-0.281***	0.047***	0.087***	-0.266***
	(0.010)	(0.032)	(0.054)	(0.010)	(0.033)	(0.055)
Correlation of public transfers with …		0.000	0.000		0.203***	0.064
		-	-		(0.075)	(0.055)
of private transfers with …			0.000			0.012
			-			(0.054)
Number of observations		2,294			2,294	
Log likelihood	-5113.2			-5086.3		

Source: our own calculations, using the TSCS survey.

(1) is a joint model comprising one Tobit equation for public transfers, one Tobit equation for private transfers, and one ordered Probit equation for life satisfaction. (2) is a simultaneous recursive model with two Tobit equations and one ordered Probit equation, public transfers being endogenous in the private transfer equations and private and public transfers being endogenous in the life satisfaction equation. Standard errors are in parentheses, significance levels equal to 1% (***), 5% (**), and 10% (*). Each regression also includes a set of regional dummies; the ordered Probit equation for life satisfaction also includes a set of threshold levels.

Table 5. The role of transfers given on life satisfaction and financial satisfaction

Variables	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	(3) Financial satisfaction
Head female	0.098**	0.098**	0.100**	0.121**
	(0.048)	(0.048)	(0.048)	(0.048)
Age	-0.032***	-0.032***	-0.032***	-0.038***
	(0.009)	(0.009)	(0.009)	(0.009)
Age squared (/100)	0.038***	0.037***	0.037***	0.040***
	(0.009)	(0.009)	(0.009)	(0.009)
In couple	0.142**	0.142**	0.144***	0.294***
	(0.055)	(0.055)	(0.055)	(0.056)
Household size	-0.006	-0.005	-0.007	-0.009
	(0.014)	(0.014)	(0.014)	(0.014)
Education Secondary	0.097	0.098	0.100	0.098
(ref : No education/primary)	(0.077)	(0.077)	(0.077)	(0.078)
Gymnasium	0.156*	0.156*	0.160*	0.137
	(0.092)	(0.092)	(0.092)	(0.093)
High school/Vocational school	0.252***	0.243***	0.245***	0.205**
	(0.090)	(0.090)	(0.090)	(0.090)
Post high school	0.426***	0.421***	0.426***	0.425***
	(0.100)	(0.100)	(0.100)	(0.100)
University or more	0.441***	0.415***	0.415***	0.504***
	(0.106)	(0.107)	(0.107)	(0.107)
Health Poor	-0.495***	-0.494***	-0.499***	-0.454***
(ref : very good or good)	(0.052)	(0.052)	(0.052)	(0.052)
Very poor	-0.954***	-0.953***	-0.956***	-0.877***
	(0.078)	(0.078)	(0.078)	(0.078)
Working	0.026	0.026	0.028	-0.036
	(0.060)	(0.060)	(0.061)	(0.061)
Unemployed	-0.279**	-0.272**	-0.272**	-0.349***
	(0.120)	(0.120)	(0.121)	(0.122)
Total income received (/10^{e}8)	0.069***	0.055***	0.056***	0.066***
	(0.017)	(0.018)	(0.018)	(0.018)
Transfer decision	0.139**			
	(0.060)			
Amount given (/10^{e}8)		0.462***		
		(0.135)		
Amount of gift/for free (/10^{e}8)			0.295	0.509***
			(0.189)	(0.189)
Amount of loan/exchange (/10^{e}8)			0.699***	0.677***
			(0.242)	(0.241)
Living in an urban area	-0.267***	-0.272***	-0.281***	-0.209***
	(0.052)	(0.052)	(0.052)	(0.052)
Coefficient of correlation			0.698 (0.012)	
Test:[life coefs = financial coefs]			Chi²(24)=40.25; prob=0.0201	
Number of observations	2294	2294	2294	
Log likelihood	-4581.1	-4577.9	-8470.1	

Source: our own calculations, using the TSCS survey.
(1) and (2) are ordered Probit models, (3) is a bivariate ordered Probit model. Standard errors are in parentheses, significance levels equal to 1% (***), 5% (**), and 10% (*). Each regression includes a set of regional dummies and a set of threshold levels.

Appendix

Figure A1. Composition of income and life satisfaction

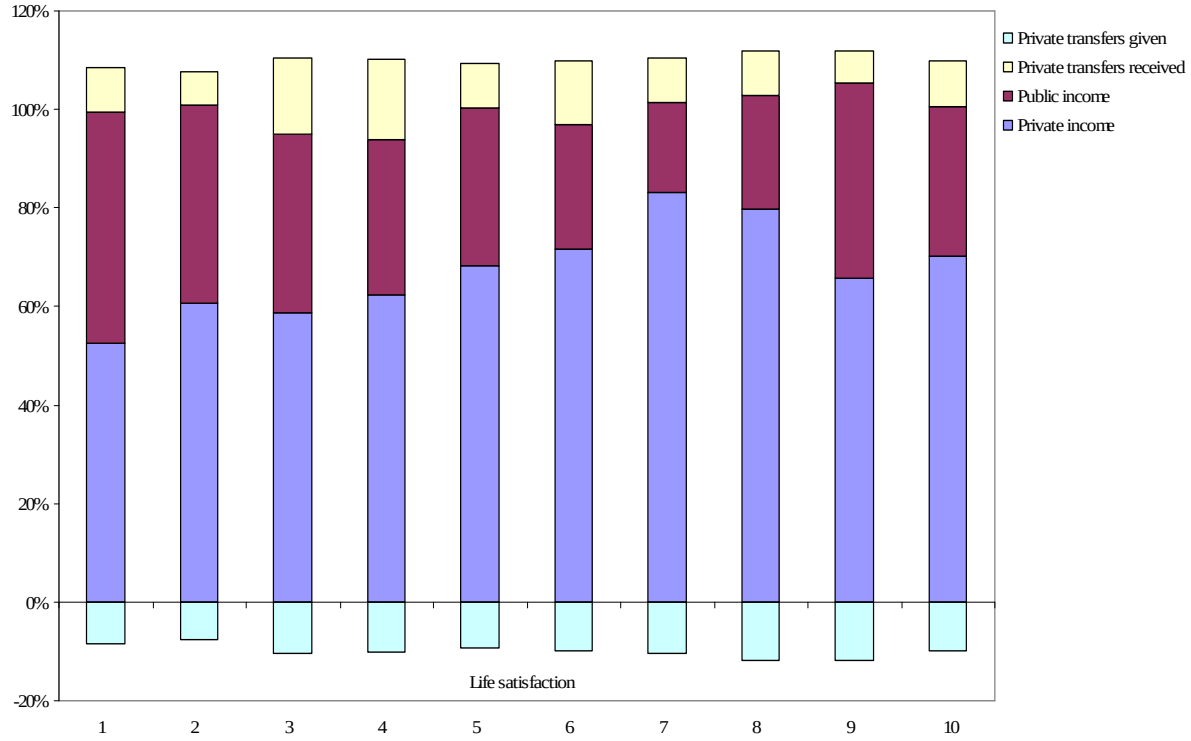


Figure A2. Composition of income and financial satisfaction