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**Four Essays on Interhousehold Transfers and Institutions  
in Post-Communist Romania**

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UNIVERSITY OF GOTHENBURG

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*to my parents*

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Andreea Mitrut

Portugal, April 2008

## **Abstract**

This thesis consists of four essays related to different social and economic aspects in post-communist Romania:

### **Paper 1: Motives for Private Gift Transfers: Theory and Evidence from Romania**

In many developing and transitional countries, inter-household transfers in general and gifts in particular are sizable and very important. We use unique Romanian data that enables us to isolate pure gifts from other kinds of private transfers. We find that social norms are important for explaining the occurrence of gifts. However, we find different motives for gifts to the rich and the poor. Middle- and high-income households are part of reciprocal networks and receive more the higher their incomes and the more they give to others. The poor may be excluded from reciprocal networks, but they still receive, since there is a social duty to give.

### **Paper 2: Group and Network Participation. Romania after the fall of Communism**

This paper investigates the determinants of formal group membership and informal network participation. We are particularly interested in the effect of heterogeneity, be it in terms of inequality or ethnicity. We find that inequality has a negative effect on formal group membership. Also, we find that inequality acts differently on poor and rich people: when inequality increases, it is the relatively poor persons who do not participate in groups and informal networks. Finally, we explore separately the determinants in different types of formal groups, and we find that in ethnically fragmented communities there is a lower participation in groups that involve close social interactions.

### **Paper 3: Do private and public transfers affect life satisfaction? Evidence from Romania**

Using Romanian survey data we 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, we do find that people are happier when giving private transfers.

#### **Paper 4: Behind closed doors. School enrollment of Romanian institutionalized children**

Tragic images of Romanian institutionalized children shocked Western audiences when broadcasted for the first time in the early 1990s, immediately after the fall of Ceausescu. We use a unique census that covers *all* institutionalized children in 1997, and find that institutionalized children are significantly less likely to be enrolled in school compared to their non-institutionalized same-age peers. We identify a special group of institutionalized children: the social orphans, i.e., children who have living parents but have no contact with them. We find that among healthy children, those in permanent institutional care, i.e. social orphans and orphans, are significantly less likely to be enrolled in school than non-institutionalized children, while if we only look at children who suffer from a severe medical problem, we do not find significant differences between the two groups. That is probably because both groups are at high risk of poor education.

*Keywords:* Romania, gifts, reciprocity, social norms, groups, informal networks, inequality, heterogeneity, happiness, private transfers, public transfers, crowding-out, institutionalized children, child welfare, education, health.

*JEL codes:* D10, D12, D31, D64, D71, G19, I20, I30, I31, I38, J13, R20, Z13.

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(with Katarina Nordblom)

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# Paper I



# Motives for Private Gift Transfers: Theory and Evidence from Romania \*

Andreea Mitrut and Katarina Nordblom<sup>†</sup>

## Abstract

In many developing and transitional countries, inter-household transfers in general and gifts in particular are sizable and very important. We use unique Romanian data that enables us, contrary to most previous studies, to isolate pure *gifts* from other kinds of private transfers and to study them in detail. We find that social norms are important for explaining the occurrence of gifts and that the rich and the poor receive to the same extent. However, we find different motives for gifts to the rich and the poor. Middle- and high-income households are part of reciprocal networks and receive more the higher their incomes and the more they give to others. Although the poor may be excluded from reciprocal networks, they still receive, since there is a social duty norm to give.

*Keywords:* Gifts, transfers, altruism, reciprocity, Romania, social norms.

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# 1 Introduction

*”If friends make gifts, gifts make friends”* –Sahlins (1972).

Private gift transfers are important all over the world. People give gifts to family, friends, neighbors, etc. Parents may give to their children out of love and affection, or one may help a person in a bad situation because of compassion or empathy. However, this is not the whole picture. In everyday life there are many situations where gift giving is a mere result of confirming some social norms and customs, and not simply an altruistic act. Imagine attending a wedding. No-one shows up at a wedding empty-handed, since it usually is a social duty (at least implicitly) to bring a gift. Also imagine a neighborhood, where neighbors help each other with different tasks. Then there is also a social norm to contribute, and no-one wants to appear less generous than others. There may also be reciprocal networks, where one is more inclined to give to those who have been generous towards oneself. This is likely to be especially important in transition and developing countries with strong social networks. Yet, very little has been done to understand the economic effects of the social aspects of gift giving. Most of the recent work on private transfers in developing countries has been focused on altruistic and exchange motives, and not on social norms (see e.g., Cox et al., 1998, 2004; Cai et al., 2006; Kazianga, 2006).

The overall purpose of this paper is to shed some light on why people give gifts to each other. Most previous studies have been concerned with private transfers in general, but since we can easily imagine that people may have different motives for lending money and for giving pure gifts, we believe that a lot would be gained in terms of understanding these behaviors by studying one kind of transfer at a time. We have an unusually rich Romanian data set, which distinguishes among pure gifts, loans, exchanges of similar services or different tasks, and payments. This enables us to isolate the pure gifts from other transfers in a way that was impossible in most previous studies. We concentrate on gifts, since they are the most frequent and the most sizable kind of private transfer (Amelina et al., 2004). Hence, we exclude transfers

explicitly made as loans or for exchange reasons.<sup>1</sup> A main result is that social norms are an important gift motive in Romania, and as far as we know this is the first economic study that explicitly takes social norms into account when studying inter-household gifts.<sup>2</sup>

Romania is a transition country with limited public transfers and where inter-household transfers in general, and gift transfers in particular, are very important (Amelina et al., 2004). Ninety-five percent of our sampled households were involved in gift transfers during 2002. Sociological and anthropological studies have documented the social importance of gift transfers in Romania, especially in terms of gifts connected to important traditions and ceremonies such as the alms,<sup>3</sup> funerals, and hospitality (Kligman, 1988; Hann, 2006). In developing and transition countries, inter-household transfers are typically much more common and also larger than in Western countries, and Romania is no exception. In Burkina Faso, private transfers received constitute 33 percent of recipient household income on average (Kazianga, 2006). In Poland they account for 4.6 percent (Cox et al., 1997) and in Romania around 12 percent, while in the U.S. they represent only around 1 percent (Schoeni, 1997). Still, there are very few studies on inter-household transfers in transition and developing countries, and many of them have focused on risk-sharing mechanisms and the role of gifts and other informal transfers as buffers against different types of shocks (see e.g., Fafchamps, 1992; Fafchamps and Lund, 2003).

We set up a simple theoretical model where apart from altruism, we acknowledge that one may feel socially obliged to give; in some situations or to

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<sup>1</sup>We exclude the "negative" side of gifts, i.e. bribing, although Schechter (2007) shows that theft and bribing are important.

<sup>2</sup>There are, however a few papers that include a social dimension in private transfers. According to Sugden (1984), people feel a duty to contribute to a public good when others in the community also contribute, Ravallion and Dearden (1988) find moral obligations to be important for transfer behavior in Java, and Cassar et al. (2007) find that relational social capital matters to group lending in South Africa and Armenia. Platteau and Sekeris (2007) discuss social esteem and shame in a theoretical model of gift exchange.

<sup>3</sup>To avoid misfortune, "the living are *obliged* to offer alms for the dead, primarily in the form of commemorative meals and prayer, in addition to those acts that are ritually performed during the burial rites(...) While meal is in progress any passerby is invited" (Kligman, 1988). In many parts of Romania, people also receive new clothes, money, or new furniture as gifts during this event.

certain people, irrespective of the recipient's own gift behavior. We call this *duty*, and it may be induced by e.g., traditions (cf. the alms gift). We also take reciprocity in a broad sense into account, and assume that people are willing to give to those who have shown a generous behavior (towards oneself or others). This reciprocity is similar to, but broader than, the commonly studied *exchange*, as it may include more than two parties (cf. the above-mentioned neighborhood). Our three gift motives give different predictions for both the occurrence and the magnitude of gifts, which can then be tested empirically. Altruism predicts that gifts are negatively correlated with recipient income, reciprocity predicts a positive relationship since higher income is likely to increase the possibility to take part in an informal reciprocal network, and according to the duty norm there should be no relation between the two.

A strong and novel result is that social norms have a positive impact on the occurrence of gifts. Hence, like much of the existing literature, we can reject altruism as the main motive behind gift transfers. Instead, we find that gifts in Romania are mainly motivated by social norms and reciprocity. Conditional on there being a positive gift, we analyze what determines the amount. In doing so, we follow e.g. Cox et al. (2004) and allow recipient income to affect gift receipts in a non-linear spline fashion. We thereby uncover different motives behind gifts to the poor and to the non-poor: while high- and middle-income Romanians receive out of reciprocity, the poor cannot afford to be part of the reciprocal networks, but still receive gifts as a result of a social norm of duty.

The remainder of the paper is organized as follows. In Section 2, we first discuss our three gift motives and then set up our formal model of private gift giving and derive predictions for the empirical part. Section 3 presents our data and our estimation results are presented and analyzed in Section 4. Finally, Section 5 concludes the paper.



## 2 Private gift giving

As mentioned in the introduction, there are different theoretical explanations to gift behavior, and as discussed by Schokkaert (2006), a mixture of motives are likely to be present at the same time. In contrast to previous literature, we introduce social norms as partly motivating gifts and combine a duty norm and reciprocity with altruism into one utility function, allowing for the different motives to be present simultaneously. Our simple theoretical framework thus highlights the implications of three distinct gift motives, which we will make use of in the empirical part. We briefly discuss the implications of each motive before presenting the analytical exposition in Section 2.1.

### *Altruism*

The first gift motive considered in the model is altruism (Becker, 1974). Altruistic income redistribution may motivate gifts from a richer donor to a poorer recipient. Although altruism is rarely supported by empirical studies,<sup>4</sup> the theory is compelling and we like to think of giving as an action of love, empathy, or friendship — it seems plausible that people would help others they love and who find themselves in poor economic situations. Moreover, the richer the donor and the poorer the recipient, the more likely it is that the gifts are given out of altruism (and the more sizable they tend to be).

### *Reciprocity*

Even if receiving a gift is by definition free, once you have received a gift you may want to reciprocate it with another gift. This, however, does not necessarily imply a strategic behavior between the donor and the recipient, which means that our concept of direct reciprocity is connected with, but different from the reciprocity concept developed in psychological game theory.<sup>5</sup> Since

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<sup>4</sup>One exception is Cai et al. (2006) who find that gifts to poor Chinese pensioners are altruistically motivated.

<sup>5</sup>See, e.g., Rabin (1993); Fehr and Schmidt (1999); Fehr and Gächter (2000); Dufwenberg and Kirchsteiger (2004), where reciprocity implies two strategically interacting agents.

we are concerned with pure gifts, our notion is also a bit different from the commonly studied exchange motive.<sup>6</sup>

However, there may also be a broader kind of reciprocity where a generous behavior is rewarded by a third party, just like the "reverse reciprocity" discussed by Kolm (2006) and the "indirect reciprocity" studied by Seinen and Schram (2006). The main idea is that you tend to be nice to others (e.g., helping for free or through gifts) if they have shown a generous behavior, but not necessarily towards you.<sup>7</sup> This kind of indirect reciprocity contains a social component and according to this, the transfer from a person  $i$  to another person  $j$  should be in parity with  $j$ 's own gifts to others in the community. If  $j$  himself has not contributed to anyone in the community, then he should not receive anything out of reciprocity. On the other hand, if  $j$  is a generous person who has given a lot to others, then  $i$  is more willing to give him a large gift. Since donor income increases gifts, irrespective of the gift motive, a richer individual is also likely to receive larger gifts out of reciprocity than a poor.

Our notion of reciprocity thus allows for both direct and indirect reciprocity in combination, since our data does not allow us to make a distinction between the two.

### ***Social norms***

We also recognize the willingness to comply with social norms of gift giving, norms that may be stronger or weaker in different societies. We consider what we call a *duty norm*. This norm implies a social duty to give in certain situations. Examples are social customs, like the Romanian requiems or alms. In such cases, the individual feels a social obligation to give, while the amount is not important. Giving out of duty is somehow similar to

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<sup>6</sup>As stated in Kolm (2000), *exchange* refers more to an a priori bidding agreement. We do not refer to transactions motivated by direct exchange services or payments (e.g., I give/help you with something *because* you have given me something). The possibility to control for these different transfers in the empirical part creates a perfect setting to concentrate on *gifts*.

<sup>7</sup>"People who give are given to, even by people who did not benefit from their acts" (Kolm, 2006).

the warm-glow notion of Andreoni (1990) where charitable giving makes the donor feel good. However, our duty norm is a bit different since there is also a social dimension where a stronger social norm increases the occurrence of gifts, but not necessarily the given amount.<sup>8</sup>

According to the duty norm, a person  $i$  should give to another person  $j$  irrespective of  $j$ 's gift behavior and income, but simply because of the social obligation to give. In addition, no return-gift is required or even expected. Although the norm only concerns the occurrence and not the size of the gifts, a higher donor income could increase the size of gifts: A rich household may e.g. hold a more expensive ceremony when a family member has died.

## 2.1 The model

Let us now connect our three motives into a simple formal model. Consider a potential donor,  $i$ , and a potential recipient,  $j$  (possibly two neighbors). Individual  $i$  is altruistic towards  $j$ , and also has a desire to reciprocate  $j$ 's gift behavior as well as to conform to the social norm of giving. We therefore formulate the following utility function for  $i$  as:

$$U_i = u_i(c_i) + \alpha u_j(c_j) - \frac{1}{2}\rho (X_i - \bar{X}_j)^2 + \delta\eta I_i, \quad (1)$$

$$\text{where } I_i = \begin{cases} 1 & \text{if } X_i > 0 \\ 0 & \text{otherwise} \end{cases}$$

and where  $\alpha \geq 0$  reflects the degree of altruism towards  $j$ .<sup>9</sup> Consumption,  $c$ , for both agents depends on their exogenous pre-transfer income  $Y$  and on possible gifts  $X$ . This means that  $i$ 's consumption is:

$$c_i = Y_i - X_i, \quad (2)$$

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<sup>8</sup>Also Schokkaert (2006) acknowledges that when we look at inter-household giving, an intrinsic feeling of duty is perhaps more appropriate than "warm glow."

<sup>9</sup>We abstract from the assumption of mutual altruism. Inclusion of mutual altruism is possible, but would complicate the analysis considerably and make the predictions for our empirical exercise less accurate.

where  $X_i$  is the gift from  $i$  to  $j$ .<sup>10</sup> Accordingly,

$$c_j = Y_j + X_i - n\bar{X}_j, \quad (3)$$

where  $\bar{X}_j$  denotes the possible average gift from  $j$  to a third party (e.g.  $n$  other neighbors) observable by and exogenous to  $i$ .<sup>11</sup>

$\rho$  measures how important  $i$  thinks reciprocity is. Our assumption of reciprocity implies that  $j$  is a first mover and that  $i$  observes  $j$ 's gift behavior (on average  $\bar{X}_j$ ) and wants to reward generosity. We allow this reciprocity to be both direct and indirect in the sense that  $i$  may be concerned with gifts both to him specifically and to people in general. We, however, make the simplifying assumption that a gift from  $j$  to  $i$  does not significantly affect the budget of  $i$ .<sup>12</sup> That  $\bar{X}_j$  is completely exogenous to  $i$  is a strong assumption, but in a rather large community  $\bar{X}_j$  is unlikely to be a function specifically of  $X_i$ , even if  $j$  would count on some reciprocity from others in the community.<sup>13</sup> We model the concern for reciprocity as a loss in case the gift  $X_i$  deviates from  $j$ 's average gift to others,  $\bar{X}_j$ .<sup>14</sup>

<sup>10</sup>Gifts received from others may be included in  $Y_i$ , but those gifts are treated as constants.

<sup>11</sup>We do not explicitly model the behavior of  $j$ , but assume that his gifts to others are increasing in his income. The fact that we abstract from any strategic interaction between  $i$  and  $j$  ( $j$  is not assumed to count on his gifts to be reciprocated by  $i$  when he makes his decision) should not be too strong, considering that we deal with pure gifts and not explicit exchange transfers.

<sup>12</sup>We could divide reciprocity into direct and indirect reciprocity also assuming that gifts from  $j$  directly to  $i$  affect  $i$ 's budget:

$$U_i = u_i(c_i) + \alpha u_j(c_j) + \frac{\beta}{2}(X_i - X_{ji})^2 + \eta \delta I_i - \frac{\rho}{2}(X_i - \bar{X}_j)^2, \quad (4)$$

where  $\frac{\beta}{2}(X_i - X_{ji})^2$  reflects the direct reciprocity and  $\frac{\rho}{2}(X_i - \bar{X}_j)^2$  the indirect. Due to the direct income effect, this notion would imply less accurate predictions and since our data, anyway, does not allow us to make a distinction between gifts from  $j$  to  $i$  and from  $j$  to others, we stick to the combined notion of reciprocity.

<sup>13</sup>It would of course be possible to set up a model and solve for a community-wide equilibrium, where everyone takes everyone's gifts into account, but that would be beyond the scope of the present paper.

<sup>14</sup>That the loss function is quadratic is partly for notational convenience, partly because we believe that it is plausible that the marginal utility of  $X_i$  actually is affected by the magnitude of  $\bar{X}_j$ , which would not be the case if we, e.g., modeled it as an absolute deviation following, e.g., Fehr and Schmidt (1999). Another paper where the loss function

$\eta \geq 0$  is the exogenous strength of the social norm concerning gift giving in the community. The parameter  $\delta \geq 0$  reflects how important individual  $i$  thinks it is to conform to the duty norm of giving. If he gives *something*, i.e., if  $X_i > 0$ , then he fulfills this norm ( $I_i = 1$ ) and if he gives nothing, i.e.,  $X_i = 0$ , then he does not ( $I_i = 0$ ). However, the magnitude of  $X_i$  once positive does not affect the norm fulfillment.<sup>15</sup>

All three above mentioned gift motives are potentially taken into account when  $i$  decides if and how much to give to  $j$ . When  $i$  maximizes (1) with respect to  $X_i$  subject to (2) and (3), and taking  $\bar{X}_j$  as given, the first-order Kuhn-Tucker conditions are:

$$-u'_i + \alpha u'_j - \rho (X_i - \bar{X}_j) = 0 \quad \text{if } X_i > 0, \quad (5)$$

$$-u'_i + \alpha u'_j + \delta \eta + \rho \bar{X}_j < 0 \quad \text{if } X_i = 0. \quad (6)$$

## 2.2 The decision to give or not

If there is no positive gift from  $i$  to  $j$ , then the inequality in (6) holds, i.e.

$$\Delta = \frac{\partial U_i}{\partial X_i} = -u'_i + \alpha u'_j + \delta \eta + \rho \bar{X}_j < 0. \quad (7)$$

The last two terms are always non-negative, which means that a corner solution is less likely when reciprocity and/or social norms affect gifts than when altruism is the only motive. By differentiating  $\Delta$ , we can see what affects the probability of an interior solution and thereby get predictions for the probits in the empirical section. Total differentiations can be found in

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in terms of reciprocity is quadratic is Alpizar et al. (2008), where the individual also gets reduced utility from deviating from norms concerning giving.

<sup>15</sup>Perhaps it would be more realistic to assume that the gift would have to exceed a certain positive amount in order to fulfill the norm (if you are attending a wedding you would not feel like you were fulfilling the norm if you gave the bridal couple only a small flower). However, assuming that  $X_i \geq \underline{X} > 0$  would not alter the theoretical results in any qualitative way and in the empirical part there is no way we could have guessed what this  $\underline{X}$  would be.

Appendix A, and a summary of the predictions for the empirical part is presented in Section 2.4, Table 1.

The effect of increased donor income is unambiguously positive, irrespective of the motive:

$$\frac{\partial \Delta}{\partial Y_i} = -u_i'' > 0. \quad (8)$$

If  $j$  has given to a third party, it may affect the likelihood that  $i$  will make a transfer to  $j$ :

$$\frac{\partial \Delta}{\partial \bar{X}_j} = -\alpha n u_j'' + \rho \geq 0. \quad (9)$$

Due to altruism,  $i$  is more likely to give a transfer to  $j$  if  $j$  has increased his average gift, since this makes  $j$  poorer. This is true for reciprocity as well: The likelihood of giving increases in the recipient's gift, since generous behavior is rewarded. However, according to the duty norm, the gift given by  $j$  is of no importance for the behavior of  $i$ .

If  $i$  does not give and the social norm is strengthened, the likelihood of starting to give increases if the duty norm  $\delta$  is important:

$$\frac{\partial \Delta}{\partial \eta} = \delta \geq 0. \quad (10)$$

When it comes to the effect of recipient income,  $Y_j$ , the effect is ambiguous:

$$\frac{d\Delta}{dY_j} = \rho \frac{\partial \bar{X}_j}{\partial Y_j} + \alpha u_j'' \left( 1 - n \frac{\partial \bar{X}_j}{\partial Y_j} \right). \quad (11)$$

Due to altruism, a gift is even less likely if  $Y_j$  increases so that the recipient becomes richer. According to reciprocity and the social norm, there is no direct effect from recipient income on gift probability. However, according to reciprocity, there would be an opposite effect working via increased  $X_j$ . When  $Y_j$  increases, so do the gifts given by  $j$ , which implies that a transfer to  $j$  for reciprocal reasons becomes more likely. The social norm of duty says that one should give irrespective of the recipient's income or gift behavior.

## 2.3 Interior solution

If there is a positive gift  $X_i$  from  $i$  to  $j$ , then equation (5) holds. Appendix A presents all comparative statics in detail: They can be summarized as follows. The predictions for the gift amounts are presented in Table 1.

If donor income increases, the gift increases irrespective of the motive:

$$\frac{\partial X_i}{\partial Y_i} = \frac{u_i''}{\Omega} > 0, \quad (12)$$

where

$$\Omega = u_i'' + \alpha u_j'' - \rho < 0.$$

For a gift from the recipient to a third party, the effect depends on which motive is effective:

$$\frac{\partial X_i}{\partial \bar{X}_j} = \frac{\alpha n u_j'' - \rho}{\Omega} \geq 0. \quad (13)$$

If  $i$  is driven by altruism, then  $X_i$  will increase, because  $j$  becomes poorer the larger the gift he has given. If reciprocity is most important, the amount given will also increase, since  $i$  wants to reward  $j$ 's generous behavior. Finally, if the duty norm determines  $X_i$ , then the gift behavior of the recipient is of no importance.

A strengthened social norm does not affect the gift amount, since the duty norm only affects the occurrence of gifts but not their amounts.

The effect of recipient income,  $Y_j$ , is once again unclear:

$$\frac{dX_i}{dY_j} = -\frac{\rho \frac{\partial \bar{X}_j}{\partial Y_j} + \alpha u_j'' \left(1 - n \frac{\partial \bar{X}_j}{\partial Y_j}\right)}{\Omega}. \quad (14)$$

If  $i$  is driven by altruism, he will decrease  $X_i$  if  $Y_j$  increases. If  $i$  is instead driven by the duty norm, he does not care at all about the income level of  $j$ , leaving the gift unaffected. If reciprocity is the effective motive, there is no direct effect from  $j$ 's income. However, there is an indirect effect because  $i$  wants to reciprocate the increased average gift  $\bar{X}_j$ . Hence, for a donor driven by reciprocity, an increase in recipient income results in a larger gift.

Since different motives may be present simultaneously, some of the derivatives above have ambiguous signs. However, on the margin, there should be one effective motive, so in order to get clear predictions for the empirical part we present the predictions for each motive separately in Table 1.

## 2.4 Summary of predictions

Table 1 presents a summary of the predictions from the theoretical model. We will keep these predictions in mind when we, in Section 4, empirically try to understand the gift motives.

Table 1: Summary of predictions for gifts  $X_i$  from  $i$  to  $j$

Dominating transfer motive	$P(X_i > 0)$				$X_i X_i > 0$			
	$Y_i$	$\bar{X}_j$	$\eta$	$Y_j$	$Y_i$	$\bar{X}_j$	$\eta$	$Y_j$
Altruism, $\alpha$	+	+	0	-	+	+	0	-
Duty, $\delta$	+	0	+	0	+	0	0	0
Reciprocity, $\rho$	+	+	0	+	+	+	0	+

The effect of  $Y_j$  on both probability and amount is indirect and works through  $X_j$ , according to (11) and (14). Therefore, when we control for all variables in the regressions, also a significant effect from  $Y_j$  is consistent with reciprocity if  $X_j$  is positively significant at the same time. We will discuss these issues more in detail in Section 4. Ideally, we would have liked to have information about all four variables in Table 1, but in our data we can not study donors and recipients at the same time. Then it makes more sense to concentrate on recipients, whose income affects gifts differently depending on the motive, rather than on donors, whose income has a positive effect on both the probability of giving and on the size of the gift conditional on giving.



### 3 Data

We base our empirical analysis on Romanian data from the 2003 *Transfers and Social Capital Survey*.<sup>16</sup> This is a nationally representative sample covering 2,641 households (1,569 urban and 1,072 rural). Due to non-item responses for some questions, our sample is reduced to 1,961 households.<sup>17</sup> For Romania, this is the first survey that looks carefully at the direction and the nature of inter-household transfers. The questions posed were *In 2002, did you or did a member of your household receive money from a person from another household?* and the like for food, clothes etc. and for transfers given. If there was a transfer the respondent answered whether the transfer was 1) *A gift/for free*, 2) *A loan/exchange of similar services*, 3) *An exchange (I received something different than what I gave, excluding money)* or 4) *A payment/sale*. This careful division gives us a unique opportunity to disentangle pure gifts from other kinds of transfers. We also have information about from/to whom transfers were received/given and the size of every transfer.<sup>18</sup> Besides inter-household transactions, we have information on demographic variables (e.g., family size, family composition, number of children in the household, age, and occupation) and variables related to social norms. A detailed description of the data is reported by Amelina et al. (2004).

Table 2 presents the occurrence of gifts. A total of 94.5 percent of the households in our sample participated in some kind of gift transfer, and 64.2 percent both gave and received. Finding more donors than recipients is not surprising, since people tend to both be more accurate when it comes to transfers given and under-report the transfers received, especially the in-kind help.<sup>19</sup>

Before going any further, we need to emphasize some aspects to help us

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<sup>16</sup>This survey was conducted in 2003 as a part of the World Bank project *Romania: Poverty Assessment*.

<sup>17</sup>We drop households with missing information for household head education, age, income, health status, gifts, or social-capital related variables.

<sup>18</sup>The in-kind amounts represent the subjective evaluation of the respondent: *What is the equivalent in money for this service/object?*

<sup>19</sup>Contrary to other studies where more detailed questions refer to transfers received than to transfers given (Cox et al., e.g., 2004), we have symmetric questions about transfers received and given.

Table 2: Gifts between households

	Number of households	Percent of the total sample (N=2,422 observations)
Households giving gifts	2,221	91.7
Households receiving gifts	1,624	67
Households both giving and receiving gifts	1,555	64.2
Households neither giving nor receiving gifts	132	5.5

understand the large number of households involved in gift giving. First, the questions about gifts do not require a minimum threshold, implying that even very small gifts are slotted in. The questions are also very broad, ranging from money to free food products, meals, clothes, medical services, private lessons, or help with daily housework activities (e.g., cleaning, cooking, minor repairs), transportation, etc.<sup>20</sup>

Even though more households give than receive, the amounts received are, on average, higher than the amounts given. Gross receipts represent almost 12 percent of the recipients' total pre-transfer income, implying that private gifts are of real economic importance for Romanian households.<sup>21</sup>

The richness of the data provides a detailed picture of the gift flows in Romania. We observe a dense web of gifts between parents and children, brothers, aunts, neighbors, and friends. These relations are presented in Table 3. A drawback is that we cannot infer anything about transfers *within* the household, since transfers are recorded only *between* households.<sup>22</sup>

<sup>20</sup>The most common type of in-kind transfer are food products, meals, and clothes. If the in-kind gifts would have included a lot of time transfers we could have had potential problems, but help with work (building a house, agriculture), taking care of disabled people, etc, are not common as *gifts/for free*, but rather as *exchange of similar services* or *payment* and are therefore excluded from our gift analysis.

<sup>21</sup>The average gift amount is about 1/3 of the average social security transfers. Amelina et al. (2004) report that gift-giving flows in absolute terms are five times higher than transfers through the Minimum Income Guarantee national social assistance program. Also note that the monthly median income at the household level was about 130 USD.

<sup>22</sup>Co-residence is a common type of intergenerational transfer. In our data, nearly 40 percent of the households consist of adult children, older parents, grandmothers, and uncles or aunts living together. Often one assumes that co-residence is based on the needs of the older persons, but research has shown that co-residence is typically mutually beneficial to both generations (Skinner, 2006). “*Now my only source of support is my father’s pension.*”

Table 3: Gifts by relationship to the head of the respondent household (N=1,961)

	Monetary Gifts				In-kind Gifts			
	To		From		To		From	
	No.hh	Median Amount (lei)	No.hh	Median Amount (lei)	No.hh	Median Amount (lei)	No.hh	Median Amount (lei)
Parents	98	2,000,000	128	5,000,000	336	1,550,000	294	2,000,000
Children	195	4,000,000	137	3,000,000	275	2,000,000	304	1,300,000
Extended family	321	1,000,000	126	2,150,000	727	1,000,000	437	800,000
Others	466	500,000	80	1,000,000	1,477	800,000	685	500,000

Note: *Extended family* category includes nephew/niece, brother/sister, grandfather/grandmother, uncle/aunt, and so on. *Other* category includes friends, neighbors, co-workers, and so on. 1USD= 32,795 ROL (Romanian LEI) (WorldBank, 2003).

Table 3 shows the complexity of gifts. In-kind transfers are more frequent than monetary gifts. Nearly 75 percent of the sample gave some sort of in-kind gift to neighbors or friends, while only 24 percent gave money. Gifts of meals, food products, and clothes occupy a significant percentage of the in-kind gift transfers. At least two lines of reasoning, not necessarily independent of each other, could explain this: On one hand one could think of social customs such as the requiems or alms organized especially in the rural areas, when clothes and meals are offered to the entire neighborhood, friends, and family. At the same time, gifts of meals could signal an affiliation with a social network and implicitly a promise of future reciprocation.<sup>23</sup>

## 4 Empirical Estimates

### 4.1 Specification

The estimation strategy used is very similar to Cox (1987). We first fit a probit equation for the gross recipient households and then estimate what determines the amount received conditional on having received a gift.

As stated by the predictions in Table 1, our variables of interest are the recipient and donor household pre-transfer incomes, the amount of the gifts given by the recipient, and the strength of the social norm.

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*There are five of us in our family, and we all live off my father's pension*" (rural respondent, Romania in (Amelina et al., 2004)).

<sup>23</sup>Hann (2006) talks about the Romanian traditional "norm of generosity."

Ideally, we would have liked to know about both the recipient and the donor for each gift, but we only have information about one of them at a time.<sup>24</sup> Since recipient income varies in its predictions contrary to donor income, we focus on gross recipients in the following analysis.<sup>25</sup>

The latent variable underlying the gross receipts for the  $j$ th household is

$$T_j^* = \alpha_0 + \alpha_1 Y_j + \alpha_2 X_j + \alpha_3 \eta_j + \xi Z_j + \varepsilon_j. \quad (15)$$

When the latent variable is positive, the actual gift,  $T_j$ ,<sup>26</sup> becomes positive. The actual gift is measured as the value of all money and in-kind receipts.<sup>27</sup>  $Y_j$  is the household income of  $j$ ,  $X_j$  is gifts that the household has given to others,  $\eta_j$  reflects the social norm strength in the community,  $Z_j$  is a vector including household characteristics, and  $\varepsilon_j$  is a normally distributed error term.

If household  $j$  receives a gift, the amount received,  $T_j$ , is estimated using Heckman's generalized Tobit method (Heckit):

$$T_j = \beta_0 + \beta_1 Y_j + \beta_2 (Y_j - K) D_j + \beta_3 X_j + \beta_4 \eta_j + \varsigma Z_j + E(u_j | T_j > 0), \quad (16)$$

$$\text{where } \begin{cases} D_j = 1 & \text{if } Y_j > K \\ D_j = 0 & \text{otherwise} \end{cases} \quad (17)$$

and  $u_j$  is a random error component. We allow for non-linearities between gifts received and recipient income through a spline regression. Below a certain income threshold (i.e.,  $K$ ), income could have another impact on

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<sup>24</sup>This could result in an omitted variable bias, whose sign and size depend on the correlation between the recipient and the donor incomes. Kazianga (2006) for Burkina Faso and Cox and Jakubson (1995) and Cox and Rank (1992) for the U.S. find a positive but small bias (against altruism).

<sup>25</sup>The results for gifts from the donors' perspective are available on request.

<sup>26</sup> $T_j$  is equivalent to the gift denoted  $X_i$  in the theoretical model.

<sup>27</sup>We have also run separate regressions for in-kind and money gifts. Both probits and OLS estimates are very similar irrespective of the nature of the gifts.

transfers received compared to above the threshold. The theoretical model in Section 2 predicts different impacts of recipient income depending on transfer motive. If high-income households can afford to participate in reciprocal networks while low-income households can not, we would expect the effective motive to vary depending on recipient income.<sup>28</sup>

Previous studies have found quite contradictory effects depending largely on the estimation method. Some have estimated negative effects between recipient income and the amount received using a Tobit model (e.g., Altonji et al., 1997; Schoeni, 1997) while others have estimated a positive effect using a generalized Tobit (Heckit) estimation (e.g., Cox, 1987; Cox and Jakubson, 1995). The most recent studies use a spline specification to test the non-linear relationship between recipient income and private transfers, i.e., allowing for different motives depending on recipient income (Cox et al., 2004; Kazianga, 2006). Besides not being robust to non-normal errors, a Tobit model also assumes that the signs of the coefficients in the transfer probability and in the transfer amount equations are the same. Thus, the preferred estimation strategy that we implement is a two-stage Heckman model (Heckit).<sup>29</sup>

We need to find a proxy for the social norm strength,  $\eta$ , which is a rather challenging task. We use the variable that we believe best captures the strength of the social norm concerning transfer behavior in the community. More exactly, we use the following question: *"In this village/neighborhood people generally do trust each other in matters of lending and borrowing money."* We believe that for a country like Romania (where most people cannot formally borrow money), living in a community where people trust each other in matters of lending money is a good social norm proxy for

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<sup>28</sup>Cox et al. (2004) also use a spline regression and the same intuition to show that different transfer motives prevail depending on recipient income.

<sup>29</sup>This estimation will solve the problem of proportionality, but is still not robust to non-normality. However, our choice is also based on the fact that in our sample, the respondents systematically failed to provide information about the amounts of in-kind gifts received, especially when asked to find the monetary equivalent of gifts such as meals, clothes, help inside the home, etc. Thus, they reported receiving/giving but not the amounts of the gifts (zero). Also, as said before, people tend to be more accurate when it comes to what they give than to what they receive. Another argument of a selection process is that if there is a high probability of receiving a transfer, then the amount received will be high as well.

transfer behavior. Thus, our proxy for the strength of social norms in the community is a dummy variable that equals one if the respondent answered that he/she agrees with the above statement. Since strong social norms tend to be highly correlated with a large amount of social capital,<sup>30</sup> an alternative would be to proxy the social norm strength with the more standard social capital variable trust. Our results are robust when we form such a "social capital index" where we include responses to the two statements: "*In this village/neighborhood, people are willing to help you if you need it,*" and "*In this village/neighborhood, people generally trust each other in matters of lending and borrowing money.*"

To account for the potential endogeneity between gifts received and gifts given, we need an instrument that is correlated with the amount given but not with the probability of receiving/the amount received. Our candidate is charitable gifts. The two-stage least squares estimation for the amount received is:

$$T_j = \alpha_0 + \alpha_1 Y_j + \alpha_2 X_j + \alpha_3 \eta_j + \xi Z_j + \varepsilon_j, \quad (18)$$

$$X_j = \mu_0 + \mu_1 Y_j + \vartheta X_j^{IV} + \mu_3 \eta_j + \zeta Z_j + \nu_j. \quad (19)$$

The important assumption here is that our instrument,  $X_j^{IV}$ , is correlated with  $X_j$  but uncorrelated with  $\varepsilon_j$ . We estimate  $X_j$  in (19) and then substitute its predicted value into (18), correcting the standard errors.<sup>31</sup> In Section 4.4 we discuss this IV procedure in detail. Table 6 in Appendix B summarizes the household characteristics used as explanatory variables in the regression analysis.

## 4.2 The likelihood of receiving a gift

Estimates of the probit equation for the gross receipts are presented in Table 4, Column 1. The dependent variable takes the value of 1 if the respondent

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<sup>30</sup>Fukuyama (2000) refers to social capital as an "instantiated informal norm that promotes cooperation between two or more individuals," while Bowles and Gintis (2002) say that "Social capital generally refers to...a willingness to live by the norms of one's community and to punish those who do not."

<sup>31</sup>The strategy is the same when we look at the probability of receiving a gift or at the amount.

declared that the household received a gift (money or in-kind) during the last year, and 0 otherwise.

We find that income has a positive but not significant effect on the probability of receiving gifts. If the household has given a gift, the likelihood of having received a gift increases in the given amount,  $X_j$ . The estimated probit coefficient for the social norm is positive and significant.<sup>32</sup>

The probability of receiving follows a U-shape over the life-cycle, consistent with previous findings (e.g., Cox et al., 1998). Unlike some studies (Cox et al., 1998; Lucas and Stark, 1985; Cox et al., 2004, for Peru, Botswana, and the Philippines, respectively), but similar to Cox et al. (1997) for Poland, the gender of the household head does not influence the probability of receiving gifts. As family size increases, the probability of receiving gifts from another household decreases. Since we separately control for the number of children, one possible explanation for this could be related to co-residency, which in itself is a kind of intergenerational transfer. Co-residency also implies a possibility of resource pooling and risk sharing. If the household head perceives himself/herself as being in good health, the probability of receiving a gift decreases, which is also consistent with previous findings in the literature.

Traditions and customs differ among Romanian regions. Therefore, we control for six historical regions with Bucharest as the reference. The regional dummies turn out to be significant, indicating that social norms concerning gift giving, which vary across the country, are important.

To summarize these findings in relation to the predictions in Table 1, we find that a strong social norm increases the probability of receiving a gift, which indicates that social norms are indeed important for the occurrence of gifts. Recipient income is positive but statistically insignificant, which is not consistent with altruism. Finally, the positive effect of gifts given on the probability of receiving gifts supports both altruism and reciprocity. Given

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<sup>32</sup>We also estimated four separate probits for gifts received from parents, children, close relatives, and from *others*. Recipient income was insignificant in all regressions except when the donors were *others*; then income had a positive impact on the likelihood of receiving. The social norm and amounts given were positive and significant in all probits. This suggests that reciprocity is the main gift motive among friends and neighbors, while we cannot disentangle altruism and duty among close relatives.

Table 4: Gross Gifts Received

	Probability of receiving gift	Generalized Tobit (amount received)	OLS	OLS (poor)	OLS (rich)
Pre-private transfer income /1,000,000	0.002 (0.001)			0.030 (0.058)	0.043** (0.019)
Low Income		-0.210 (0.270)	0.205 (0.124)		
High Income		0.045** (0.023)	0.044** (0.019)		
Amount given as a gift /1,000,000	0.009*** (0.003)	0.216** (0.116)	0.183*** (0.068)	0.114 (0.105)	0.192*** (0.070)
Social Norm	0.213** (0.100)	-1.690 (4.410)	-2.391 (2.631)	1.479 (1.308)	-3.334 (3.549)
<i>Other characteristics</i>					
Female headed household	0.092 (0.061)	-3.592 (3.045)	-4.109 (2.867)	0.062 (0.971)	-5.331 (3.855)
Age of household head	-0.047*** (0.012)	-2.320*** (0.766)	-2.081*** (0.627)	-0.721*** (0.327)	-2.698*** (0.896)
Age <sup>2</sup>	0.001*** (0.001)	0.020*** (0.007)	0.018*** (0.006)	0.006*** (0.003)	0.025*** (0.009)
Health	-0.112* (0.063)	2.632 (3.306)	3.230 (2.268)	-0.923 (1.031)	5.056 (3.593)
Household size	-0.130*** (0.026)	-0.193*** (2.225)	-1.167* (0.904)	-0.032 (0.503)	-1.287 (1.257)
Children under 18	0.129*** (0.047)	1.001 (2.850)	0.218 (1.937)	-0.827 (0.955)	0.581 (2.426)
Pensioner in the household	-0.012 (0.080)	1.379 (3.630)	1.348 (2.054)	1.085 (1.126)	0.656 (2.808)
<i>Education</i>					
Secondary school	0.037 (0.104)	-1.811 (5.057)	-2.103 (3.612)	-1.281 (0.954)	-3.218 (7.943)
Technical/High school	0.114 (0.145)	-2.534 (5.789)	-3.239 (3.477)	0.695 (1.493)	-5.618 (6.786)
Post high school	-0.021 (0.137)	-4.370 (6.599)	-4.419 (4.111)	-4.108* (2.277)	-6.855 (6.596)
University	0.046 (0.150)	6.319 (7.027)	5.819 (8.401)	-3.612* (2.004)	3.779 (6.596)
Urban	-0.010 (0.071)	4.870 (3.330)	4.989*** (1.173)	4.229*** (1.306)	5.356** (2.283)
Regions	yes	yes	yes	yes	yes
Constant	1.370*** (0.382)	57.60*** (18.116)	59.22*** (19.421)	21.53*** (11.094)	80.68*** (25.75)
Mill's ratio		10.752 (25.084)			
Number of observations	1,961	1,961	1,253	324	929
Log-likelihood	-1,210.4	Wald test: 189.3			
$R^2$			0.06	0.15	0.05
Pseudo $R^2$	0.06				

NOTE: 1. Robust std. errors within parentheses.

2. \*, \*\*, and \*\*\* denote significance at the 0.10; 0.05; and 0.01 level, respectively.



our estimates so far we cannot clearly identify one single gift motive. Looking at the donor side we find that income has a positive effect on the probability of giving, which is consistent with all three gift motives in our model. We also find that social norm increases the probability of giving a gift.

In Table 5 we present the results of a sensitivity analysis. This enables us to better understand the influence of each of our main variables, since the effects are interdependent as discussed in Section 2.4. According to the reciprocity norm, the effect of recipient income is indirect, working through gifts given by the recipient. Table 5 displays that the major effect from the pre-transfer income is the indirect effect through the amounts of gifts given.

Table 5: Probability of receiving a gift - Sensitivity analysis

	[1]	[2]	[3]	[4]
Pre-private transfer income /1,000,000	0.001* (0.001)	0.001* (0.001)		0.002 (0.001)
Social norm		0.219** (0.100)	0.212** (0.100)	0.213** (0.100)
Amounts given as a gift /1,000,000			0.009*** (0.003)	0.009*** (0.003)
Control variables	all	all	all	all
No. obs.	1,961	1,961	1,961	1,961
Pseudo R2	0.048	0.051	0.06	0.06

NOTE: 1: Robust std.errors within parentheses.

2: \*, \*\*, and \*\*\* denote significance at the 0.10; 0.05; and 0.01 levels.

The first column in Table 5 presents the probit including all the control variables as in Table 4, but without the social norm indicator and the amount of the gifts given. In Column 2 we add the social norm measure, and see that social norms do indeed matter. In both of these columns we get a positive and significant effect of income on the probability of receiving a gift. Column 3 does not include the income variable. The last column is the baseline specification of our probit model. In this case, income does not affect the likelihood of receiving gifts directly, but rather indirectly through the increased gifts given, which is consistent with reciprocity.

### 4.3 The amount received

Next, we focus on the *amounts received* conditional on having received a gift. The second step of the Generalized Tobit estimates and OLS estimates on the restricted sample are presented in Table 4, Columns 2 and 3.<sup>33</sup> We let household pre-transfer income enter the equation for the received amounts in a spline form. As previously discussed, the idea is that different motives may be effective for rich and poor, and recipient income influences the amount received differently depending on the motive.<sup>34</sup> Our hypothesis for the spline is that rich Romanians are involved in reciprocal gift networks. The higher their income, the larger the received amounts should be. Poor households, on the other hand, cannot afford to take part in these networks. Still, there may be a duty norm saying that one should give to the poor, which makes us believe that the duty norm can be decisive for poorer households. This norm is especially important if we consider the celebrations and rituals that are so common in Romania and where the poor very often receive gifts (e.g., meals, clothes, housing objects, or money) (see Kligman, 1988).

We find the income threshold ( $K$ ) at the first quartile, at 25.9 million lei.<sup>35,36</sup> Thus, at incomes lower than the 1st quartile, the transfer function is completely flat. At incomes above this threshold, gifts received increase in income. Moreover, the amount of gifts given has a positive and significant impact on the amount received. While the probability of receiving was significantly influenced by our social norm proxy, the amount received is not,

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<sup>33</sup>The additional terms used in the probit selection equation to generate the inverse Mill's ratio terms for the generalized Tobit are interaction variables between income before private transfers and age. In an alternative specification we introduced some dummy income. The generalized Tobit then produced similar results.

<sup>34</sup>Spline models are appropriate when changes are not abrupt (then a simple dummy or a quadratic income works fine) but instead rather subtle. Using splines we thus impose a continuity restriction at the joint points (i.e. knot,  $K$ ) (Marsh and Cormier, 2001).

<sup>35</sup>We found the knot by varying the income for each 5th decile and picking the one that maximized the log-likelihood for our OLS (see also Cox et al., 1998). An alternative (more precise, but also more computationally demanding) way of finding the knot would be to estimate it along with the other regression coefficients of the model using a non-linear method as conditional least square. However, finding the knot with such precision is not our main aim.

<sup>36</sup>The spline specification is significant at the 0.01 level against the null that income enters in a simple linear form.

which is consistent with all our suggested motives.

The above evidence suggests that motives may indeed differ, depending on recipient income. The positive impact of income and gifts given on the amount received suggests that reciprocity is the dominating gift motive for middle- and high-income recipients. At the same time, we are unable to determine whether the poorest receive out of duty or reciprocity.

A subsequent step is therefore to run the OLS on two sub-samples: one for the poor households (below the spline threshold) in Column 4, and one for the middle- and high-income households (i.e., above the threshold) in Column 5. Our findings reveal that reciprocity is the dominating motive among the middle- and high-income households. Note that if we split the sample already in the probit, we see that social norms are also important for these groups. As we stated in Section 2, reciprocity may be direct as well as indirect, and perhaps the fact that social norms are also significant suggests that indirect reciprocity at the community level may be the most important. On the other hand, in Column 5, we find that the poor households do not receive out of reciprocity, but rather out of a social duty norm (again, see the summary of the predictions in Table 1).

#### **4.4 Endogeneity issue and further discussions**

A potential problem when studying transfers given and received is that causality may be reversed. We touched upon this in the theoretical model, where we assumed that gifts given by the potential recipient were to be treated as exogenous. Here, we will test whether that assumption is valid or if we have an endogeneity problem. Therefore, as previously pointed out, we instrument the amounts given as gifts with a charity-related variable, as this variable is correlated with the amount given but not with the amount received. Our IV is a dummy that equals 1 if a respondent household gave money to some special charity-related projects carried out in the community (e.g., building a church, repair roads, etc.). One may worry that giving to charity may signal to the network that one is generous, and the network may reciprocate by giving back. However, that would be the case if we were

using the time spent, e.g., building a church, since this may be *observed* by the network and the community. Moreover, given the traditional and religious life in Romania, it is common for regular people to make anonymous money donations especially to church. The 2SLS-estimated coefficients on the amount given as a gift is 0.14, twice as large as in the initial regression, while the standard error of the IV estimate is much larger (0.110) with a wide confidence interval. The Hausman test fails to reject the null hypothesis of weak exogeneity, so our concern of reversed causality is not empirically warranted (P-value 0.24). For the amount received as the dependent variable, we repeat the same analysis and again get similar results for the OLS and 2SLS, with larger standard errors for the IV estimate.<sup>37</sup> The Hausman test shows weak evidence against the null hypothesis that the amount given as a gift is exogenous (P-value 0.12). Hence, it is a valid assumption that the gifts given are exogenous.

It is widely recognized that especially in rural developing countries, self-reported income is likely to include errors. Therefore, we alternatively proxy our income measure with a consumption measure, and the results remain fairly robust.<sup>38</sup> Hence, the quality of our income data seems sufficient.

## 5 Conclusions

In this paper we have studied private gift transfers. Thanks to our unusually rich data, we have been able to isolate pure gifts from loans and exchange-related transfers.

We have formulated a theoretical model in which not only *pure altruism* but also social norms and reciprocity motivate the act of gift giving. We test these motives on data from Romania, where gift giving is very frequent among both rich and poor. As many as 67 % of the sampled households had received gifts during the past year, implying that giving plays a more important role in a transition economy than in many Western countries.

We can rule out *pure altruism* as the dominating gift motive, and find

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<sup>37</sup>R-square in the 2SLS is, as expected, smaller than for the OLS: 0.04.

<sup>38</sup>Results available upon request.

that social norms are important for gift behavior among Romanians. Middle- and high-income households also act in a *reciprocal* way, giving large gifts to those with high incomes and/or to those who have given large gifts. For the poorest households, gifts received are independent of income and mainly motivated by a social norm of duty. It is worth noting that the occurrence of gifts is almost the same among poor and non-poor, implying that gifts are not more frequent among rich people than towards poor. This is an important finding from a policy perspective since it is often argued that the poor are both socially and economically excluded. Hence, although the poor cannot take part in reciprocal networks, they still receive gifts out of the duty norm.

Although we find no evidence of pure altruism, perhaps we should be a bit cautious when ruling out that possibility altogether. In our regressions, we only had access to recipient income. According to theory, altruistic gifts depend on the *relative* incomes of the donor and the recipient, and especially gifts between parents and children (whose incomes tend to be highly correlated) could very well be altruistic if high-income children receive from parents with even higher income. Altonji et al. (1997) claim that estimates become biased against altruism when we are unable to control for donor income.

Our analysis has only been concerned with short-run effects. The theoretical model in this paper is static, and our data contains economic activities during one single year. One could, though, imagine that social norms concerning private transfers change over time, possibly due to a country's economic situation. Romania has, for many years, had problems with poverty. In the presence of poverty and with, e.g., low public pensions, one could perhaps regard it as natural that people try to help each other and that this has become a norm. It is therefore plausible that an economy-wide economic improvement could decrease this need and in the long run also affect social norms about private transfers. A task for future research would therefore be to analyze the long-run effects of endogenous social norms on gift giving.

## References

- Alpizar, F., Carlsson, F., and Johansson-Stenman, O. (2008). Anonymity, reciprocity, and conformity: Evidence from voluntary contributions to a national park in Costa Rica. *Journal of Public Economics*, 92(3–4):1047–1060.
- Altonji, J. G., Hayashi, F., and Kotlikoff, L. J. (1997). Parental altruism and inter vivos transfers: Theory and evidence. *Journal of Political Economy*, 105(6):1121–1166.
- Amelina, M., Chiribuca, D., and Knack, S. (2004). Mapped in or mapped out? The Romanian poor in inter-household and community networks. *The World Bank*.
- Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *Economic Journal*, 100(401):464–477.
- Becker, G. S. (1974). A theory of social interactions. *Journal of Political Economy*, 82(4):1063–1094.
- Bowles, S. and Gintis, H. (2002). Social capital and community governance. *Economic Journal*, 112:F419–F436.
- Cai, F., Giles, J., and Meng, X. (2006). How well do children insure parents against low retirement income? An analysis using survey data from urban China. *Journal of Public Economics*, 90:2229–2255.
- Cassar, A., Crowley, L., and Wydick, B. (2007). The effect of social capital on group loan repayment: Evidence from field experiments. *The Economic Journal*, 117:F85–F106.
- Cox, D. (1987). Motives for private income transfers. *Journal of Political Economy*, 95(3):508–546.
- Cox, D., Eser, Z., and Jimenez, E. (1998). Motives for private transfers over the life cycle: An analytical framework and evidence for Peru. *Journal of Development Economics*, 55(1):57–80.
- Cox, D., Hansen, B., and Jimenez, E. (2004). How responsive are private transfers to income? Evidence from a laissez-fair economy. *Journal of Public Economics*, 88:2193–2219.

- Cox, D. and Jakubson, G. (1995). The connection between public transfers and private interfamily transfers. *Journal of Public Economics*, 57(1):129–167.
- Cox, D., Jimenez, E., and Okrasa, W. (1997). Family safety nets and economic transition: A study of worker households in Poland. *Review of Income and Wealth*, 43(2):191–209.
- Cox, D. and Rank, M. R. (1992). Inter-vivos transfers and intergenerational exchange. *Review of Economics and Statistics*, 74(2):305–314.
- Dufwenberg, M. and Kirchsteiger, G. (2004). A theory of sequential reciprocity. *Games and Economic Behavior*, 47:268–298.
- Fafchamps, M. (1992). Solidarity networks in preindustrial societies: Rational peasants with a moral economy. *Journal of Development Economics*, 71:261–287.
- Fafchamps, M. and Lund, S. (2003). Risk-sharing networks in rural Philippines. *Economic Development and Cultural Change*, 41:1–34.
- Fehr, E. and Gächter, S. (2000). Fairness and retaliation: The economics of reciprocity. *Journal of Economic Perspectives*, 14(3):159–181.
- Fehr, E. and Schmidt, K. (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics*, 114:817–868.
- Fukuyama, F. (2000). Social capital and civil society. *Prepared for the IMF Conference on Second Generation Reforms*.
- Hann, C. (2006). The gift and reciprocity: Perspectives from economic anthropology. In Kolm, S.-C. and Ythier, J. M., editors, *Handbook of the Economics of Giving, Altruism and Reciprocity*. Elsevier.
- Kazianga, H. (2006). Motives for household private transfers in Burkina Faso. *Journal of Development Economics*, 79(1):73–117.
- Kligman, G. (1988). *The wedding of the dead: Ritual, Poetics, and Popular Culture in Transylvania*. University of California Press.
- Kolm, S.-C. (2000). The logic of good social relations. *Annals of Public and Cooperative Economics*, 71(2):171–189.
- Kolm, S.-C. (2006). Reciprocity: Its Scope, Rationales and Consequences. In Kolm, S.-C. and Ythier, J. M., editors, *Handbook of the Economics of Giving, Altruism and Reciprocity*. Elsevier.

- Lucas, R. E. and Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy*, 93(5):901–918.
- Marsh, L. and Cormier, D. (2001). *Spline Regression Models*. SAGE.
- Platteau, J.-P. and Sekeris, P. G. (2007). On the feasibility of power and status ranking in traditional setups. mimeo, University of Namur.
- Rabin, M. (1993). Incorporating fairness into game theory and economics. *American Economic Review*, 83(5):1281–1302.
- Ravallion, M. and Dearden, L. (1988). Social security in a "moral economy": An empirical analysis for Java. *Review of Economics and Statistics*, 70(1):36–44.
- Sahlins, M. (1972). *Stone Age Economics*. Aldine Atherton.
- Schechter, L. (2007). Theft, gift-giving, and trustworthiness: Honesty is its own reward in rural Paraguay. *American Economic Review*, 97(5):1560–1582.
- Schoeni, R. F. (1997). Private interhousehold transfers of money and time: New empirical evidence. *Review of Income and Wealth*, 43(4):423–448.
- Schokkaert, E. (2006). The empirical analysis of transfer motives. In Kolm, S.-C. and Ythier, J. M., editors, *Handbook of the Economics of Giving, Altruism and Reciprocity*. Elsevier.
- Seinen, I. and Schram, A. (2006). Social status and group norms: Indirect reciprocity in a repeated helping experiment. *European Economic Review*, 50(3):581–602.
- Skinner, E. (2006). Social protection and older people's livelihoods. A Bolivian case study. *Paper presented at FISS Conference, Social Protection in an Aging World*.
- Sugden, R. (1984). Reciprocity: The supply of public goods through voluntary contributions. *Economic Journal*, 94(376):772–787.
- WorldBank (2003). Romania poverty assessment.



## A Appendix: Comparative statics

### A.1 Corner solution

$$\Delta = \frac{\partial U_i}{\partial X_i} = -u'_i + \alpha u'_j + \delta \eta + \rho \bar{X}_j < 0 \quad (20)$$

$$\frac{\partial \Delta}{\partial Y_i} = -u''_i > 0 \quad (21)$$

$$\frac{\partial \Delta}{\partial \bar{X}_j} = -\alpha n u''_j + \rho \geq 0 \quad (22)$$

$$\left. \frac{\partial \Delta}{\partial \bar{X}_j} \right|_{altruism} = -\alpha n u''_j > 0 \quad (23)$$

$$\left. \frac{\partial \Delta}{\partial \bar{X}_j} \right|_{duty} = 0 \quad (24)$$

$$\left. \frac{\partial \Delta}{\partial \bar{X}_j} \right|_{reciprocity} = \rho > 0 \quad (25)$$

$$\frac{\partial \Delta}{\partial \eta} = \delta \geq 0 \quad (26)$$

$$\left. \frac{\partial \Delta}{\partial \eta} \right|_{altruism} = 0 \quad (27)$$

$$\left. \frac{\partial \Delta}{\partial \eta} \right|_{duty} = \delta > 0 \quad (28)$$

$$\left. \frac{\partial \Delta}{\partial \eta} \right|_{reciprocity} = 0 \quad (29)$$

$$\frac{d\Delta}{dY_j} = \rho \frac{\partial \bar{X}_j}{\partial Y_j} + \alpha u''_j \left( 1 - n \frac{\partial \bar{X}_j}{\partial Y_j} \right) \quad (30)$$

$$\left. \frac{d\Delta}{dY_j} \right|_{altruism} = \alpha u''_j \left( 1 - n \frac{\partial \bar{X}_j}{\partial Y_j} \right) < 0 \quad (31)$$

$$\left. \frac{d\Delta}{dY_j} \right|_{duty} = 0 \quad (32)$$

$$\left. \frac{d\Delta}{dY_j} \right|_{reciprocity} = \rho \frac{\partial \bar{X}_j}{\partial Y_j} > 0 \quad (33)$$

## A.2 Interior solution

$$\frac{\partial X_i}{\partial Y_i} = \frac{u_i''}{\Omega} > 0, \quad (34)$$

where

$$\Omega = u_i'' + \alpha u_j'' - \rho < 0.$$

Comparative statics for each variable follow; first the total effect, then the effect for each gift motive separately —  $\alpha$ ,  $\rho$  and  $\delta$ .

$$\frac{\partial X_i}{\partial \bar{X}_j} = \frac{\alpha n u_j'' - \rho}{\Omega} \geq 0 \quad (35)$$

$$\left. \frac{\partial X_i}{\partial \bar{X}_j} \right|_{\text{altruism}} = \frac{\alpha n u_j''}{u_i'' + \alpha u_j''} > 0 \quad (36)$$

$$\left. \frac{\partial X_i}{\partial \bar{X}_j} \right|_{\text{duty}} = 0 \quad (37)$$

$$\left. \frac{\partial X_i}{\partial \bar{X}_j} \right|_{\text{reciprocity}} = \frac{-\rho}{u_i'' - \rho} > 0 \quad (38)$$

$$(39)$$

$$\frac{\partial X_i}{\partial \eta} = 0 \quad (40)$$

$$(41)$$

$$\frac{dX_i}{dY_j} = - \frac{\rho \frac{\partial \bar{X}_j}{\partial Y_j} + \alpha u_j'' \left( 1 - n \frac{\partial \bar{X}_j}{\partial Y_j} \right)}{\Omega} \leq 0, \quad (42)$$

$$(43)$$

$$\left. \frac{dX_i}{dY_j} \right|_{altruism} = \frac{-\alpha u_j''}{\Omega} \left( 1 - n \frac{\partial \bar{X}_j}{\partial Y_j} \right) < 0 \quad (44)$$

$$\left. \frac{dX_i}{dY_j} \right|_{duty} = 0 \quad (45)$$

$$\left. \frac{dX_i}{dY_j} \right|_{reciprocity} = \frac{-\rho}{\Omega} \frac{\partial \bar{X}_j}{\partial Y_j} > 0 \quad (46)$$

## B Appendix: Summary statistics

Table 6: Characteristics of the variables used in the analysis (N=1,961)

	Means
<i>Household income(per year):</i>	
Income before gift transfers	68,000 (72,100)
Household income net of gift transfers	67,900 (80,000)
Social Norm Index*	6.14 (2.18)
Social Norm: dummy equal to 1 if respondent <i>strongly agrees</i> or <i>agrees somewhat</i> with "In this village/neighborhood, people generally do trust each other in matters of lending and borrowing money."	0.35 (0.47)
Charity: dummy equal to 1 if responding yes to "In the last years, did you or a member of your household participate with money in projects carried out in your community (e.g., building a church, road repairment, etc.)?"	0.51 (0.50)
<i>Education (proportion of hh heads with):</i>	
Elementary school or none	0.12
Secondary school	0.27
High school/professional school	0.39
Post high school/Short term college	0.12
University or higher	0.10
<i>Other characteristics:</i>	
Age of the household head	52.24 (15.75)
Female-headed households	0.51 (0.50)
Number of children under 18 in the hh	0.57 (0.87)
Household size	3.06 (1.59)
Health: dummy equal to 1 if respondent answered <i>very good</i> or <i>good</i> to "All in all, how would you describe your state of health these days?"	0.56 (0.49)
Urban	0.59 (0.49)
<i>Regions:</i>	
Northeast	0.16
Southeast	0.14
South-Muntenia	0.15
Southwest	0.16
Northwest	0.21
Centrum	0.13
Bucharest	0.05

\* min=2, max=10. Note: 1. Monetary values are in 1,000 lei (ROL) 2. Std. Dev. in parentheses.



## **Paper II**



# Group and Network Participation. Romania after the fall of Communism\*

Andreea Mitrut <sup>†</sup>

## Abstract

Using unusually rich household data from Romania, this paper investigates the determinants of formal group membership and informal network participation. We are particularly interested in the effect of heterogeneity, be it in terms of inequality or ethnicity. We find that inequality has a strong negative effect on formal group membership. Also, we find that inequality acts differently on poor and rich people: when inequality increases, it is the relatively poor persons who do not participate in groups and informal networks. This effect is the opposite of what is found in developing countries. Finally, we explore separately the determinants in different types of formal groups, and we find that in ethnically fragmented communities there is a lower participation in groups that involve close social interactions (e.g., church).

*Keywords:* Groups; Informal networks; Inequality; Heterogeneity; Romania

*JEL classification:* D71; D31; G19; O12

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# 1 Introduction

This paper examines the determinants of formal group participation and informal network membership. In particular, it explores the ways in which heterogeneity, be it in terms of inequality, ethnicity, or economic activity, affect an individual's incentives to join a formal group or be part of an informal network.<sup>1</sup> More exactly, we want to shed some light on two main aspects: First, we want to understand whether *participation in economic and socio-political groups is higher or lower in more heterogenous communities*. Romania displays a very interesting background in this regard. Unlike many Western societies where formal groups and voluntary organizations (hereafter *groups*) have become a central part of the social and political culture, in the post-communist societies in general, and in Romania in particular, people still rely on and trust their informal networks, while they feel no desire to join groups (Howard, 2003). The flip side of the *mandatory* participation in certain state-controlled organizations and of very limited formal transfers during Ceausescu's totalitarian regime was that people developed strong informal networks within close circles of friends, neighbors or kinship. These arrangements served as informal insurance networks, where people helped each other in case of need, obtained informal loans, and shared different types of information. These informal "organizations" are increasingly recognized as mechanisms by which people improve the quality of their lives and cope with different shocks, especially in developing countries. Consequently, our second aim is to understand the determinants of these informal insurance networks in the Romanian context, and in particular, we want to see whether/how *increased heterogeneity affects the participation in these networks*.

This paper is closely linked to at least two main strands of literature. First, it is related to the research that investigates the determinants of participation in socio-political groups. Political scientists and sociologists have long been interested in the determinants of participation in groups. Yet, it

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<sup>1</sup>The implicit assumption is that both formal groups and informal networks may provide some kind of economic benefit to the participants.

is only recently that economists have become interested in the link between civic engagement and community heterogeneity (for a survey of the economic literature see Costa and Kahn, 2003).<sup>2</sup> In their seminal study, Alesina and La Ferrara (2000) look at US cities and find that individuals are less likely to join socio-political groups in unequal and racially heterogeneous communities. Their underlying theoretical assumption is that people *prefer to interact with people who are similar to themselves* (in terms of income, ethnicity, or race).<sup>3</sup> A second important contribution in this area, more closely related to the present paper, is La Ferrara (2002a). She analyzes the impact of income heterogeneity on participation in economic and socio-political groups in Tanzania and finds that a higher inequality at the community level has a negative impact on group participation. However, the main theoretical assumption in her paper is not a preference for homogeneity, but rather *asymmetry in benefits and contributions* among members.

The scarce literature on the impact of heterogeneity on group participation has so far only considered US cities or communities in developing countries. This is the first study that attempts to address this important issue in the context of a transition country where dramatic changes, both on an economic and social level, have taken place.

Secondly, our paper is related to the informal risk-sharing literature. It is recognized by now that gift giving and informal credit allow households to share risk within certain networks of close family, neighbors, and friends (see, e.g., Fafchamps and Lund, 2003; Platteau, 1991; Fafchamps, 1992), while the hypothesis of complete risk sharing at the community level is always rejected. More exactly, in relatively homogeneous communities, geographic proximity may be the determinant of the formation of insurance groups, while in more heterogeneous communities the insurance may take place within ethnic groups, casts, religions, or kinship (see De Weerd, 2004; Murgai et al., 2002). The

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<sup>2</sup>More broadly, our paper is related to the *social capital* literature which has received a lot of attention in economics since the work of Putnam (1993). See also Rothstein (2005). In this paper, participation in groups and informal networks constitutes a broad measure of social interaction at the community level.

<sup>3</sup>See Alesina and La Ferrara (2005) for an excellent survey on the effects of ethnic diversity on economic policies and outcomes.

basic idea is that, regardless of one's taste for heterogeneity, it may be optimal from an efficiency point of view to interact with members of one's own type (since punishment, reputation, and reciprocity may function better in the absence of legally enforced contracts) (Alesina and La Ferrara, 2005). Knowing the mechanisms behind these informal networks is crucial, especially if we aim at understanding the marginal groups within a society. These mechanisms are especially important for the poorer people, who most probably have no access to formal credit and insurance markets and, consequently, may not adequately protect themselves from negative shocks such as droughts, unemployment, and illnesses.

Our main empirical findings using unusually rich Romanian survey data provide support for the hypothesis that heterogeneity matters. Greater inequality at the community level has a negative influence on group membership.

Moreover, we find that heterogeneity acts differently on poor and rich people: When inequality increases, it is the relatively poor persons who do not participate in groups. This finding holds both when we use subjective and objective wealth measures, and is contrary to findings for developing countries where it is usually the case that the relatively rich drop out of groups (see La Ferrara, 2002a).

The impact of inequality on participation in *informal networks* is more surprising: increased inequality at the community level has a negative effect on network participation for the relatively poor. We consider two dimensions of informal networks: informal lenders (people who would help out with a loan in case of need or an unexpected event) and friends (people one can rely on in case of need or an unexpected event). Our result confirms that, contrary to what one may expect, the poor are less likely to be involved in insurance networks, making them more vulnerable than the rich to idiosyncratic risks (De Weerd, 2004).

Finally, we find evidence that *ethnic heterogeneity* also matters. We explore separately the determinants of participation in different types of groups, and find that in ethnically fragmented communities there is a lower likelihood that individuals participate in groups that involve close social interactions

(such as church groups, cultural groups, or sports groups).

The paper is organized as follows. Section 2 briefly describes the Romanian context. Section 3 presents the data and discussions on the group, network, and heterogeneity measures. Section 4 presents our basic results and a sensitivity analysis. Section 5 looks separately at the impact of heterogeneity for the relatively poor and rich. Section 6 attempts to explain further about participation in different groups, and Section 7 analyzes participation in urban and rural areas separately. Section 8 concludes the paper.

## 2 The Romanian context

The Romanian experience under the Ceausescu regime, a civil society pulled up by the roots, was one of the most dramatic within the ex-Soviet Communist Block. The Communist regime not only repressed any form of autonomous non-state activity, but made participation in certain state-controlled groups compulsory.

The ideological "enrolment" of the population started already at age four or five, when children in kindergarten automatically became *Soimi ai Patriei* (The Fatherland's Falcons). Youngsters between 7 and 14 years were enrolled as Pioneers (*Pionieri*),<sup>4</sup> while after turning 14 they automatically became members of the Union of the Communist Youth (UTC). The main responsibilities of these organizations were to provide propagandistic training and prepare their members to love and respect the party. Finally, workers were automatically integrated into the Romanian General Trade Union, which reached 8 million members at the end of the 1980s. In 1989, almost 4 million people were active members of the Communist Party.<sup>5</sup> In addition, cultural groups were also subject to the interests of the totalitarian regime.<sup>6</sup>

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<sup>4</sup>At the end of the 1980s more than 2.5 million children were members of this organization ([www.adevarulonline.ro](http://www.adevarulonline.ro)).

<sup>5</sup>This represents almost 25 percent of the total population at that time and almost 33 percent of the active population. Among them, "it would have been difficult to find a thousand true believers" (Gallagher, 2005).

<sup>6</sup>The National Festival *Cantarea Romaniei* (Singing for Romania) used to be the main artistic competition with special patriotic songs and poems infused with politics.

The regime took away people's sense of private property, removing their right to act and think as individuals.

It comes as no surprise that in the decade following the political events of December 1989, most people felt reluctance towards any type of formal group or voluntary organization. In 2003, more than one decade after the fall of the Communism, more than 64 percent of the Romanians *did not* belong to any group.<sup>7</sup> This reluctance also has to do with the fact that the initial hope and high expectations that came with the transition soon turned to bitter disappointment; a new oligarchy with strong roots in the communist era emerged. Small groups affiliated with the security apparatus during Ceausescu's rule have reinforced their power by diverging the public wealth for their private benefits (Gallagher, 2005; Howard, 2003). The Romanian society, which was relatively egalitarian during the Communist period, has become strikingly unequal. Moreover, especially the poor feel isolated from groups that used to welcome them during Communism (Amelina et al., 2004).

In a country where the Communist Party dominated for decades with its omnipresent ideology and mechanisms of social control, the Romanian people developed strategies for improving everyday life. Scarcity in a corrupted society meant that ordinary citizens had to use informal connections to accomplish everyday tasks such as obtaining goods, medical treatment, or loans.<sup>8</sup> People formed small informal networks of close friends, relatives, and neighbors to help each other in everyday life, and used them as buffers against different forms of shocks. These networks resemble the informal community networks recognized as an important source of credit and mutual insurance in developing countries. These informal networks still persist in Romania, even though there is some evidence that they are currently deteriorating<sup>9</sup>

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<sup>7</sup>Source: author's calculations from the 2003 Transfers and Social Capital Survey. This number is very high when compared with both developed countries (e.g., US with 28 percent (Alesina and La Ferrara, 2000)) and developing countries (e.g., Tanzania with 28 percent (La Ferrara, 2002a)).

<sup>8</sup>The central role of inter-household transfers in the form of gift exchange or informal credit in Romania is also documented by sociological and anthropological studies (Kligman, 1988).

<sup>9</sup>"During Communism people helped each other more. When something happened to Ion, everyone would jump to his help. Now, if something were to happen to him, everyone says 'Let him manage himself'" (in-depth interview, Amelina et al., 2004).

and becoming more income segregated.<sup>10</sup>

### 3 Data and Measurement

The main source of data for our empirical analysis is the 2003 Transfers and Social Capital Survey (TSCS), conducted as a part of the World Bank project *Romania: Poverty Assessment*. The TSCS is a new survey, nationally representative, covering 2,641 households from both urban and rural areas. It contains detailed questions about inter-household transfers, demographic variables, informal credit and group participation.<sup>11</sup> Due to non-item responses for some questions, our sample is reduced to 2,214 households.<sup>12</sup> Additionally, we use the 2002 Romanian Census data to build our community level variables.

#### 3.1 Informal networks: measurement and discussions

Risk sharing (i.e., mutual insurance and protection against external events) usually takes place within informal networks that are made up of close relatives (more in line with Becker's altruistic framework), or are based on ethnicity, wealth, or other socio-economic characteristics (see, e.g., Coate and Ravallion, 1993; Fafchamps, 1992; Udry, 1994).<sup>13</sup>

Defining these informal insurance networks is a challenging task. Studies on various countries indicate that gift transfers and informal credits allow households to share risk within certain networks.<sup>14</sup> In the absence of dyadic data, which would be suitable to understand network formation, we rely on

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<sup>10</sup>"To go and ask for the rich...no, we do not do that. We go to the poor. When you are poor, you only go to those who are poor(...). If you go and ask for help from the rich, they will only laugh at you" (in-depth interview, Amelina et al., 2004).

<sup>11</sup>For a more detailed description of the data see Amelina et al. (2004).

<sup>12</sup>We drop households with missing information for household head education, age, income, health status, or other social capital related variables.

<sup>13</sup>Recent research shows that close relatives provide gifts, while others make informal loans (Fafchamps and Lund, 2003).

<sup>14</sup>See, e.g., Fafchamps and Lund (2003). It is usually argued that informal loans build a more direct link than gifts, which, e.g., could be more linked to social norms and traditions.

some specific survey questions.<sup>15</sup> However, it is important to define insurance networks in a way that is not endogenous to borrowing or gift giving itself. If insurance networks were defined as the individuals from whom respondents have actually borrowed, we would naturally expect funds to flow from those with excess transitory income to those without, and this would not necessarily be an evidence of network effects (Fafchamps and Lund, 2003).

Also, closely related to the point raised above, the information gathered in surveys that look at inter-household transfers is usually focused on *realized* rather than *potential* transfers. Yet, it is the latter that might lead the household behavior (Cox and Fafchamps, 2006). Knowing that you have a relative, friend, or neighbor who might help you in case of need could function as a precautionary saving mechanism.<sup>16</sup>

TSCS provides us with information about both realized and potential transfers. We use the *potential informal lenders* as our proxy for informal insurance networks (i.e., ex-ante insurance networks). More exactly, the respondents are asked: *If you suddenly needed 3-4 million lei, how many people could you turn to? (How many people would each give you 3-4 million lei?)*. The average number of potential informal lenders is 3.2, while 33 percent (or 741) of our respondents feel they would have no one to turn to. The way the question is formulated may bias our private network measure since the respondents are asked about quite a high amount.<sup>17</sup>

Information about informal networks was collected on two dimensions. Besides the number of potential informal lenders, the survey also asked about the number of close friends to rely on in case of need.<sup>18</sup> As expected, the

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<sup>15</sup>Accordingly, we will try to understand the determinants of participation in informal networks, while we can not infer anything on within-network heterogeneity.

<sup>16</sup>More exactly, it could be the case that some households have a private network to rely on, but this information would not be caught by a question that asks only about the transfers that have already occurred.

<sup>17</sup>3-4 million lei (92-122 USD in 2003) represents quite a high amount - it is almost the median monthly income for the surveyed households. Also, if we assume that people are part of homogenous informal networks (i.e., from an wealth point of view), it might be the case that if poor rely on poor, they won't have the possibility of helping each other monetarily. We discuss this issue further in the empirical analysis.

<sup>18</sup>*How many close friends do you have these days? These are people you feel at ease with, can talk about private matters with or call on for help.*

average number of friends is much higher (7.8) than the number of informal lenders (see Appendix A, Table 9 for a cross-tabulation).

These two dimensions are correlated, but only imperfectly. Table 1 presents the distribution of the respondents with no private networks across expenditure quartiles. The poorest quartile has the highest number of people among those with no private networks.

Table 1: Distribution across expenditure quartiles if *no* private networks (%)

	1st quartile	2nd quartile	3rd quartile	4th quartile
Zero friends to rely on for help (n=126)	44	26	20	11
Zero potential informal lenders (n=741)	41	30	19	10

Of course, it could be the case that our measure of private networks might suffer from some measurement errors. There could actually be a gap between the number of people considered as friends or potential informal lenders and the people that one may approach in case of a shock. When people face a shock, they go to the person most able to help them. Thus, it could be the case that the private network is actually larger than indicated by the respondents. In line with this idea, Fafchamps and Gubert (2006) used survey data from the Philippines to show that the reported network is a strong predictor of the actual network, and that the reported links (i.e., potential network/transfers) are not irrelevant, but a rather strong predictor of the loans and gifts received (i.e., realized transfers). We will come back to this issue later.

### 3.2 Groups

The TSCS asks if the respondent is a member of any group such as religious groups, political parties, trade unions, rotating credit associations (Rosca); see Table 2. Participation rates are quite low, with only 35.14 percent of the sampled households being members of at least one group. The average number of group memberships per participant is around 2.

Two comments are called for. Firstly, our definition of group implies



Table 2: Group membership

	Mean	Fee
Member of <i>any</i> group	0.35	
Member of an owners' association	0.10	0.60
Member of a trade union or labor union	0.09	0.69
Member of an agricultural society with legal personality	0.08	0.36
Member of a political party	0.07	0.34
Member of a church group	0.06	0.83
Member of a parents' committee	0.06	0.53
Member of a Rosca	0.04	0.40
Member of a family-type agricultural association	0.04	0.16
Member of a traders/business association	0.03	0.08
Member of a professional association(doctors, teachers, etc)	0.05	0.27
Member of a cultural/sports association	0.03	0.23
Member of an NGO or civic group	0.03	0.16
Member of another group	0.04	0.29

NOTE: *Fee* is the % who paid a fee during the previous year, given they are members

that membership is voluntarily; hence we exclude the case when an individual is a member of e.g., a religious group just because he or she was born into it. Secondly, at least theoretically, membership in these groups requires a payment of a fee/contribution, sometimes when you first join and some times regularly. We only have information on whether individuals paid a fee/contribution during the previous year. Column 2 in Table 2 shows the proportion of the respondents who paid a fee/contribution during the previous year, given that they are members.

Moreover, the survey provides us with information on the within-group heterogeneity in terms of income/wealth and ethnic status.<sup>19</sup> Overall, among the respondents who are members of at least one group, almost 59 percent say that they perceive themselves to be similar to their fellow group members when it comes to ethnicity. As expected, members of political parties, churches, and family-type agricultural associations sort themselves into *highly ethnically homogenous groups*. The situation becomes very different when we look at income/wealth: now only 29 percent of the group members perceive

<sup>19</sup>The respondents were asked about the degree of heterogeneity within the group: *If the subject is a member: Most of the members of this association/group are: 1.similar or 2.different in terms of their a)income/wealth; b)ethnic status.*

themselves to be similar to their fellow members.

Table 3: Within-group homogeneity

	Ethnic homogeneous %	Income/Wealth homogeneous %	Frequently interact %
Members of any group	59	29	31
Member of a political party	70	17	25
Member of a trade union or labor union	54	41	21
Member of a church group	85	37	62
Member of a Rosca	44	29	67
Member of an agricultural society	73	18	13
Member of a family-type agricultural association	71	36	16
Member of a traders/business association	59	38	25
Member of a professional association	57	51	31
Member of an owners' association	54	26	28
Member of a parents' committee	66	25	35
Member of a cultural/sports association	48	33	58
Member of an NGO or civic group	45	45	48
Member of another group	50	41	28

NOTE: The first 2 columns report the % who answered *Yes*.

*Frequently interact* is the % who answered that they interact on a *weekly/monthly* basis.

Another interesting aspect that we try to capture is how frequently the members of the groups interact. Among the households that claimed to be part of at least one of the groups, almost 31 percent responded that they interact frequently (weekly or monthly). There is a lot of variation in how often the members within a group interact. As expected, church groups and members of Roscas interact most often, while members of political parties or trade or labor union groups interact least often.

The above evidence suggests that the individuals in our sample *do not* participate in income/wealth-homogenous groups. Ethnicity seems to be more important, since members seem to sort themselves into relatively ethnically homogenous groups. This is especially true for groups that require a high degree of social interactions (such as churches, political parties, and parents' committees).<sup>20</sup> Thus, we find it of interest to understand what the determinants of group membership are.

<sup>20</sup>We are not going to use this data in our multivariate analysis. These measures refer to the individual perception of heterogeneity within a group, and we are rather interested in community level heterogeneity measures.

### 3.3 Heterogeneity measures and some theoretical discussions

Alesina and La Ferrara (2000) show that higher heterogeneity in the US cities decreases the level of social interactions and subsequently lower participation in socio-economic groups. Their underlying assumption is that people prefer to join groups composed of individuals with similar preferences. La Ferrara (2002a) addresses a similar question in the context of a developing country and finds that increased inequality decreases participation in Tanzanian groups. The theoretical framework in the latter paper, which is more closely linked to our line of thought, hinges on the asymmetry in benefits and contributions among members rather than on preferences for homogeneity. More exactly, she assumes that the benefit from participation varies with different admission rule in the group (open vs. restricted) and with *individual wealth*, such that, when inequality increases, the relatively rich have relatively less to gain and hence may choose to drop out.

This finding follows from the assumption that each member  $i$  pays a tax that is *proportional* to his or her income. Therefore, 1) anyone can pay the cost of being a member of a group and 2) a richer individual is preferred to a poorer one. Very briefly, let us assume a continuum of individuals uniformly distributed on  $[0, 1]$ , ranked on their income/wealth  $y_i$ , such that the poorest has index 0 and the richest 1. Let  $G$  be the set of individuals who participate in the group and  $C$  the total cost (assumed fixed) needed to provide the good consumed equally by all members:  $C = \int_{i \in G} ty_i di$ .<sup>21</sup> If members share the same preferences represented by  $u(\cdot)$ , then the utility of a member  $j$  will be:  $u(G) - \frac{C}{\int_{i \in G} y_i di} y_j$ . Under this very simple utility function, one can easily notice that the net utility from participation is higher for poorer members, while the cost is higher for the richer members. However, if we instead assume a fixed cost of participation for all members (i.e.,  $\frac{C}{G}$ ), then the conclusion that the poor participate in the detriment of the rich no longer holds, since they may then not be able to afford the cost of participation.<sup>22</sup> Our main

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<sup>21</sup> $t$  is initially assumed a proportional tax on members' income/wealth, while the results hold when  $t$  is a lump-sum tax.

<sup>22</sup>We only give a very brief discussion of this simple model, without carefully discussing

conjecture for group participation is that while an increase in inequality will indeed decrease the likelihood of participation in groups, we expect the relatively rich to participate, more in line with the idea that groups are rather formed by and represent the interests of certain elites (see also Arcand and Fafchamps (2008)).

Another line of research investigates the strategies used by households to smooth consumption in the face of a shock. A majority of the studies in this area show that risk-sharing networks at the village level is not a valid hypothesis, while the formation of the networks is largely dependent on castes, clans, ethnicity, religion, relatives, and friends (see, e.g., Fafchamps and Lund, 2003; Dercon and Weerdt, 2006). "Institutions" at this level may help impose norms and trust among their members. In a similar line of thought, Karlan (2007) using Peruvian microfinance data, found that there is a higher probability of defaulting on group loans in geographically and culturally heterogeneous groups. Most studies that look at informal group lending assume that the joint-liability on repayment leads borrowers to match homogeneously. Overall, "assortative matching" predicts that lending groups are formed by individuals with similar/identical risks (Ghatak, 2000).<sup>23</sup>

Given the limited information on informal networks, we are unable to determine whether members of informal networks share similar characteristics since we are unable to observe network composition. It is nevertheless expected that informal networks are quite homogeneous, both in terms of wealth and ethnicity. However, note that altruism may enter the picture, which complicates any a priori conjecture even more. All we do is investigate a correlation between community level heterogeneity and the likelihood of people having somebody to rely on. It hence remains difficult to infer strong causal relationships.

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all the assumptions and extensions. The main idea is that an increase in inequality might affect participation of the relatively poor and the relatively rich differently. Also note that the model above disregards any risk-sharing or altruism consideration. Since the main idea is quite similar to La Ferrara (2002a), we have only looked for an intuition behind our results in the empirical part.

<sup>23</sup>One important point in microfinance lending groups is that borrowers *choose* their members, which may lead to some possible endogeneity.

The data used to compute the community level heterogeneity variables comes from the 2002 Romanian Census.<sup>24</sup> Besides wealth/income inequality (i.e., Gini), heterogeneity may be measured in several dimensions, including ethnicity, age, economic activity, or education. To measure it we use the so-called "fractionalization" index,  $H_c$ .<sup>25</sup>

$$H_c = 1 - \sum_k s_{ck}^2, \quad \text{with } k = 1, \dots, K \quad (1)$$

where  $s_{ck}$  is the share of group  $k$  in the total population of community  $c$ , and  $H_c \in [0, 1]$ . This index captures the probability that two randomly selected individuals belong to different  $k$  groups. Higher values of this index (approaching 1) represent more fragmentation/heterogeneity within the community.

According to the 2002 Romanian Census data, the ethnic minorities represent about 10 percent of the total Romanian population.<sup>26</sup> In computing the ethnic index we use the following four categories  $k$ : Romanians, Hungarians, Rroma, and Others (Germans, Russians, etc). Our ethnical fragmentation has a mean of 0.17 and a standard deviation of 0.14.<sup>27</sup>

Before continuing, we will briefly explain the relevance of using this index in the Romanian context. One of Ceausescu's rigid totalitarian targets was the *national and social homogenization of the country*, which came at a high cost not only for the Romanians but especially for the national ethnic minorities. Industrialization of the countryside created a big shift both in the ethnic composition of some regions which had long been Hungarian or

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<sup>24</sup>We use *community* in a broad sense (i.e., locality), since we have both cities and smaller towns in our sample. We analyzed the community level and not the county level for two reasons: Firstly, one could argue that a large geographical unit might bias our regression against finding an effect on fragmentation (Alesina and La Ferrara, 2000). Moreover, it is generally argued that informal networks are formed within close geographical proximity by neighbors and extended family ready to provide immediate assistance in case of need.

<sup>25</sup>This is a decreasing transformation of the Herfindahl concentration index (Bossert et al., 2006).

<sup>26</sup>The largest ethnic minority groups are Hungarians (6.4 percent) and Rroma or Gypsies (2.6 percent). Note that since the Gypsy population is believed to be twice the size reported by the Census (see [www.insse.ro](http://www.insse.ro)), we expect a higher variation in ethnicity.

<sup>27</sup>The value is influenced by some "completely homogenous" communities (an index of 0) in some rural areas.

German enclaves and in the socioeconomic structure of the urban and rural areas of the country.<sup>28</sup>

In some of the specifications we also include other dimensions of heterogeneity - economic activity, educational diversity and age - using an index analogous to the one above. The  $k$  categories that we aggregated using the 2002 Census are: workers, retirees, the unemployed, working on his/her own, housewife, and others.<sup>29</sup> For educational diversity we use the following categories: university, high school/technical school, secondary school, primary school, and other situation.

Next, let us focus on our Gini inequality measure. We can not build the Gini coefficient using Census data since there is no such information. However, the TSCS provides us with thorough information about household expenditure and income. We therefore build the Gini coefficient at the community level using both income and expenditures data. Since it is often argued that neither income nor consumption data provides a reliable measure of well-being, especially in the context of a developing country, we have also constructed an *asset index* using the principal component technique.<sup>30</sup> We have chosen the inequality measure with more variation, i.e., a Gini built from expenditure data (min=.268, max=.871, mean=.39, std.dev.=.09), then for example a Gini built from income (min=.312, max=.666, mean=.41, std.dev.=.06) or from assets (min=.170, max=.357, mean=.23, std.dev.=.04).

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<sup>28</sup>Demolishing some of the Hungarian and German ethnical majority cities in order to accommodate the newcomers from other regions of the country was perceived by the ethnic minorities as an *assimilation* policy. The demographic profiles of many cities in Transylvania, once populated mainly by ethnic minorities have changed drastically since the 1970s.

<sup>29</sup>Maybe it would have been better to use, e.g., an occupational index, so we can observe white vs. blue-collar workers, etc. However, the Census does not contain that information.

<sup>30</sup>We use information about ownership of certain durable goods such as cars, radios, televisions, agricultural equipment, etc.

## 4 Empirical strategy

The overall aim is to investigate the determinants of participation in groups and informal networks, and in particular to look at the effect of heterogeneity. It would also be interesting to learn how other individual characteristics influence participation and more exactly whether females, older cohorts, or poor people are excluded from these forms of social interactions. Unless we say differently, our informal network proxy is related to a person's potential informal lenders.

In our main specification we assume that the "latent variable" measuring the expected utility from participation in a formal group of individual  $i$  in community  $c$  can be written as:

$$Y_{ic}^* = \beta X_{ic} + \gamma V_c + \delta H_c + \varepsilon_{ic} \quad (2)$$

where  $X_{ic}$  represents a vector of individual characteristics such as age, sex, and education of the household head and some household variables such as number of children in the household and household expenditures;<sup>31</sup>  $V_c$  is a vector of community characteristics such as number of inhabitants, average expenditures, urban/rural, and regional dummies;  $H_c$  includes different heterogeneity indexes at the community level.  $\varepsilon_{ic}$  is the error term, normally distributed with mean 0 and variance  $\sigma_c$ . We do not observe the "latent" variable  $Y_{ic}^*$ , but only the choice made by the individual  $i$ , which is 1 if the household head is part of a formal group and 0 otherwise:

$$P_{ic} = 1 \text{ if } Y_{ic}^* > 0 \quad (3)$$

$$P_{ic} = 0 \text{ if } Y_{ic}^* \leq 0 \quad (4)$$

We employ the same framework for informal network participation, controlling for the individual and community characteristics mentioned above.

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<sup>31</sup>The results reported below are fairly similar when using OLS, so if we have considered the number of informal lenders or friends. However, since we do not have adequate network data we only investigate the characteristics associated with a higher likelihood of participating in a network/group.

The above probit models will be estimated correcting for heteroskedasticity and clustering the residuals at the community level.

An important question is whether the effects of the heterogeneity variables at the community level hold across households with different wealth levels, or if there is a systematic tendency for the richer or the poorer individuals to drop out of groups and/or informal networks when heterogeneity increases. We will estimate the models separately for the "relatively poor" and the "relatively rich" to see whether the coefficients on heterogeneity  $\delta$  differ among the two subsamples (see also La Ferrara, 2002a). We also estimate the model above separately for the urban and the rural areas. In the last part of our empirical section we try to understand to what extent the individual and the heterogeneity measures influence participation in particular groups. Summary statistics for all variables used in the empirical part are reported in Appendix A.1.

## 4.1 Basic results

Table 4 presents our basic probit estimates; in the first two columns the dependent variable is equal to 1 if the household head belongs to at least one group, and 0 otherwise. In columns (3) and (4) the dependent variable is equal to 1 if the respondent is part of an informal network (i.e., there is at least one person to rely on with informal loans in case of need), and 0 otherwise.<sup>32</sup>

First we analyze the age of the respondent. Age is important to look at in a post-communist country, since it captures the underlying changing process. The age variable suggests an increase in group participation by older cohorts and an increase in informal network participation by younger cohorts. This is an interesting result, though not totally surprising. The older cohorts, with habits rooted in the communist period, are actively involved in trade unions, political parties, or some other groups. There is mixed evidence on group membership in other post-communist countries. Howard (2003) finds

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<sup>32</sup>Note: While we here present the results with respect to informal lenders, our results remain fairly robust when we instead consider friendship as a proxy for informal networks (results available upon request).



Table 4: Group and informal network participation - Marginal coefficients

	Group	Group	Informal network	Informal network
	[1]	[2]	[3]	[4]
Age 31-41	0.080** (0.037)	0.075** (0.038)	-0.091** (0.044)	-0.100*** (0.044)
Age 42-52	0.071* (0.047)	0.071* (0.038)	-0.121*** (0.037)	-0.126*** (0.037)
Age 53-62	0.108*** (0.038)	0.110*** (0.039)	-0.139*** (0.041)	-0.139*** (0.041)
Age 63 and older	0.172*** (0.044)	0.179*** (0.045)	-0.157*** (0.048)	-0.156*** (0.047)
Female	-0.080*** (0.022)	-0.074*** (0.022)	-0.003 (0.023)	-0.002 (0.022)
Household size	-0.010 (0.010)	-0.022** (0.010)	0.013 (0.010)	0.001 (0.011)
No. of children under 18	0.034*** (0.017)	0.042*** (0.014)	-0.036*** (0.014)	-0.027** (0.013)
Worker	0.106*** (0.031)	0.091*** (0.031)	0.081*** (0.029)	0.072*** (0.029)
Health shock	0.009 (0.023)	0.010 (0.024)	-0.056** (0.025)	-0.055*** (0.024)
<i>Education</i>				
Secondary school	0.019 (0.040)	0.016 (0.041)	0.127*** (0.030)	0.116*** (0.031)
Secondary Technical High School	0.117** (0.048)	0.104** (0.048)	0.228*** (0.040)	0.201*** (0.041)
Post High School	0.164*** (0.058)	0.129** (0.059)	0.276*** (0.027)	0.248*** (0.030)
University	0.321*** (0.062)	0.270*** (0.069)	0.285*** (0.028)	0.252*** (0.034)
Avg. expenditure in community	-0.053 (0.081)	-0.089 (0.081)	0.047 (0.069)	0.012 (0.077)
ln (pop) in community	0.009 (0.054)	0.009 (0.015)	-0.027 (0.018)	-0.028 (0.019)
Heterog ethnicity	-0.125 (0.106)	-0.121 (0.107)	-0.020 (0.127)	-0.019 (0.128)
Heterog activity	0.354 (0.433)	0.380 (0.441)	-0.655* (0.377)	-0.643* (0.371)
Gini	-0.463** (0.244)	-0.433* (0.244)	0.106 (0.236)	0.122 (0.246)
1st expenditure quartile		-0.052 (0.033)		-0.085*** (0.027)
4th expenditure quartile		0.123*** (0.028)		0.129*** (0.027)
Regions and urban	yes	yes	yes	yes
Pseudo Rsq	0.056	0.064	0.137	0.145
Observed P	0.35	0.35	0.66	0.66
Predicted P	0.36	0.36	0.68	0.69
Number of observations	2,214	2,214	2,214	2,214

NOTE: \*, \*\*, and \*\*\* denote significance at the 0.10, 0.05 and 0.01 level.

Marginal probit coefficients calculated at the means. Standard errors corrected for heteroskedasticity and clustering of the residuals at the community level.

that in Eastern Germany the organizational membership is at its highest for people aged 45-54, followed by a slight drop for people in their early 60s and an even sharper drop for those 65 and older. The same author finds quite a different pattern for Russia, where it seems that the 35-44 age group is the most active, suggesting a generational change in membership in civil society organizations. To understand the cohort effect in Romania better, we have looked at our regressions including some age specific dummies: born after 1970 (this group spent early adolescence under Communism, the reference group), born 1960 - 1969, born 1950 - 1959, born 1940 - 1949, and born 1939 or earlier (Alesina and Fuchs-Schundeln, 2007). We find the older to be progressively more involved in groups than the younger.

Turning to informal networks, the age variable has the reverse sign, suggesting a decrease in informal network participation for the very old. This result is not surprising; the very low pension level (implying almost no cash in hand) does not turn them into attractive network partners, so they are excluded from any form of informal insurance (unless based on some purely altruistic reasons). This is also in line with the idea that a young poor can be perceived as being temporarily poor while the elderly poor are more likely to be permanently poor and thus more difficult to trust with money loans. At the same time, this result sends us back to the importance of intergenerational transfers and the fact that parents or older relatives might be tacitly considered as informal lenders by young adults. There are norms in Romania saying that children should receive financial or in-kind help from their parents even when they get older, and not the other way around (MMT, 2007). Alternatively, this result could be driven by our chosen informal network proxy. We will come back to this issue later.

Now, let us turn back to the main analysis. We observe that females are less likely to be involved in groups, while the number of children under age 18 seems to positively influence group membership but negatively affect informal network participation. A higher level of education has a positive and significant impact on the probabilities of being a member of a group and of an informal network. We also include a dummy that takes the value 1 if the respondent is working and 0 if he or she is unemployed or a retiree, student, or

a housewife, which has a positive effect on both group and informal network participation.

We control for community size (i.e., log of the number of inhabitants) and the average of the log of expenditures at the community level since we want to capture the potential differences in the "demand" for participation across communities, but these do not turn out to be statistically significant.<sup>33</sup>

Next we will try to understand whether the *heterogeneity* measures influence group and informal network participation in Romania.<sup>34</sup>

The first measure of heterogeneity at the community level that we try to explain is the Gini coefficient. The estimated Gini in columns (1) and (2) in Table 4 is negative and significant, suggesting that *people living in more unequal communities are less likely to join groups*. The Gini does not seem to significantly influence informal network participation. Ethnic fragmentation does not turn out to be significant in our regressions.

We also consider the impact of household expenditure on group and informal network participation. We do so by introducing two dummies to control whether a respondent household belongs to the first or the last expenditure quartile. Belonging to the highest quartile has a positive and significant influence on both group and informal network participation.<sup>35</sup>

Contrary to our expectation, the health shock dummy has a negative and significant effect on informal network participation. If informal networks act as buffers against different types of shocks, we would not expect people to decrease participation after experiencing such a shock. We also include a

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<sup>33</sup>Controlling for these variables is very important since, as suggested in Alesina and La Ferrara (2000), if we would have found, for example, that the average wealth in the community is positively associated with participation, then participation could have been considered a "normal good" (if richer individuals sort together one would find that richer communities are associated with higher social capital, and participation might then be a normal good, meaning that the rich have more of it).

<sup>34</sup>We first run our regressions controlling only for the individual characteristics, and then we introduce the heterogeneity measures. The results are very similar, so only report the ones where we controlled for both individual and community variables.

<sup>35</sup>Similar to La Ferrara (2002a), we have also checked if there is a non-linear effect of expenditures on participation, such that the results are not a statistical artifact. More exactly, if the relation is non - linear and we fail to take that into account, Gini will be significant even if inequality per se is not a determinant of participation. Anyway, log expenditures squared is not significant.

similar variable, a dummy taking the value 1 if a respondent's present health condition is *very good* or *good*, and find a positive and highly significant effect, suggesting that the better off (health-wise) individuals have a higher likelihood of borrowing money in case of need.

In an attempt to verify the robustness of our results, we run the same regressions as in Table 4, but now include our heterogeneity measures one at a time and control for other heterogeneity measures (i.e., education and age). The results remain pretty much the same; the other heterogeneity measures are not statistically significant and the other results are unaffected. Also, we run the same regressions but control for the influential observations that may bias our heterogeneity estimates. The results are robust, with an increased statistical significance for the Gini.

## 4.2 Sensitivity analysis and some further discussions

### 4.2.1 Informal network proxy

One may argue that our results are biased by our proxy choice for informal network. More exactly, it could be the case that some households *do* have an informal network but nevertheless can not possibly borrow the amount specified in the question for the very simple reason that all persons within the informal network are as poor or monetarily restricted as the respondent, or are affected by the same shock/needs.<sup>36</sup> We try to deal with this concern in two different ways. First we consider another question where all the respondents were asked about the largest amount that they could have possibly borrow.<sup>37</sup> However, this time, the lender did not have to be another person (relatives, friends, neighbors), but could also be a bank or another more formal lender.

Important for us is that now there is *no* restriction on the amounts (see Table 5). We observe that among the 741 households who answered that

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<sup>36</sup>Again, while we know that households do not sort into highly homogenous groups, we do not know this information about networks. It remains difficult to understand the network composition or to make any inference on causality.

<sup>37</sup>"If you would need it, what is the maximum amount of money you could obtain as a loan?"

Table 5:

	No loan at all	Don't know	Yes, less than 4 million	Yes, more than 4 million	TOTAL
No informal network (3-4 million lei)	205	133	202	201	741

would be unable to get a loan of 3 or 4 million lei (hence the respondents who we have considered as having no informal network), 205 households (or 28 percent) also reported that they would be unable to get any loan at all. However, 202 of the 741 households (27.2 percent) did claim to be able to get a loan, but only of an amount smaller than 4 million lei. The 201 households that believe that they could get an even bigger loan from a bank but not from a private person were counted as "0" before, but as a positive respondent in this question.

To check the robustness of our results we looked at the estimates using a dependent variable equal to 1 if a household could get any loan at all (excluding from formal lenders or unspecified source) but not necessarily 3-4 million. The regressions are similar to the ones reported in Column 4, Table 4.<sup>38</sup> Alternatively, we run our probit considering the information on *realized* loans during the previous year (see also Appendix A, Table 9). Our heterogeneity measures remain not statistically significant.

We make use of the richness of our survey and consider the friendship dimension of informal networks, i.e., the number of friends that could be relied on for help in case of need (see Section 3.1). We run the same regression (the dependent variable equals to 1 if there is at least one friend to rely on in case of need) as in Column 4 of Table 4, and the results are fairly robust.<sup>39</sup>

<sup>38</sup>Results available upon request.

<sup>39</sup>The heterogeneity variables are not statistically significant, while the poor dummy has a negative and statistically significant effect on the likelihood of having at least one friend to rely on. For the rich on the other hand we find again a positive and statistically significant coefficient. Results available upon request.

### 4.2.2 Further discussions: a trade-off in participation?

Are the Romanian people more likely to be part of groups in order to make new friends (see, e.g., Prouteau and Wolff, 2007) or is it rather the case that people who have maintained their close network relations feel less need to be part of groups (see e.g., Howard, 2003)? We extend our econometric framework in two ways. First, our univariate probit estimates could be biased due to the likely overlap in the unobserved characteristics that could influence both group and informal network participation. Therefore, we run a bivariate probit assuming that the error terms in the simple probits are jointly distributed:  $\varepsilon=(\varepsilon_{1ic}, \varepsilon_{2ic})$  as bivariate normal with means 0, unit variances and correlation  $\rho$  (see Appendix A, Table 10 for a cross-tabulation and Table 4 for the marginal effects).<sup>40</sup> The estimated correlation coefficient  $\rho$  is positive and statistically significant ( $\rho= 0.07$ , with a standard error of 0.038, while Wald test of  $\rho= 0$ :  $\text{chi}^2=3.42$ ,  $\text{p-value}=0.064$ ). The bivariate probit estimates are preferred, although they are in the same range as the univariate probit estimates (results available upon request). It can be inferred from the estimated  $\rho$  that participation in formal groups and informal networks is not so diverse after controlling for the observed characteristics, suggesting a possible overlapping of the participation decision. In particular, the likelihood of observing a household both as part of a group and a network is positive. Nonetheless, we need to be cautious since the correlation between the error terms might be driven by the cross-sectional nature of the data or by omitted variables.

Second, estimated of a recursive model would have been suitable, but it seems hard to find instruments influencing only group participation or

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<sup>40</sup>There are four mutually exclusive pairs of observed  $P_{ic}=(P_{1ic}, P_{2ic})$ :  $(0,0), (1,0), (0,1), (1,1)$ . The corresponding likelihood function for the bivariate probit model is given by the product across the four possible choice probabilities times their associated probabilities:  $\log L(\pi|P_{ic})=\sum_{i=1}^n \text{I}\{P_{ic} = (0, 0)\} \log \pi_{00} + \text{I}\{P_{ic} = (1, 0)\} \log \pi_{10} + \text{I}\{P_{ic} = (0, 1)\} \log \pi_{01} + \text{I}\{P_{ic} = (1, 1)\} \log \pi_{11}$  for  $c = 1, \dots, C$ . The probabilities that enter the likelihood are computed:  $\text{Prob}(P_1 = P_{1ic}, P_2 = P_{2ic}) = \Phi(W_{1ic}, W_{2ic}, s_1 s_2 \rho)$ , where  $\Phi$  is the standard normal bivariate cdf,  $s_{ji(c)}$  is a sign function such that  $s_{ji(c)} = 2P_{ji(c)} - 1$  for  $j = 1, 2$  and  $W_{1,2ic} = s_{ji(c)}(\beta_j X_{ic} + \gamma_j V_c + \delta_j H_c)$  for  $j = 1, 2$  (Greene (2003); [www.gking.harvard.edu](http://www.gking.harvard.edu)).

network participation, but not the other, in order to assure the necessary identification.<sup>41</sup>

### 4.2.3 Instrumenting Gini

We also account for the possibility of endogeneity of our Gini variable and some possible measurement errors; it could be that a high degree of participation in groups may actually influence the level of inequality in a community.<sup>42</sup> We estimate a linear probability model using 2SLS using as instruments some *geographical* variables: average yearly temperature, distance to the closest market/town, a dummy for tourist areas (which could affect inequality by increasing the income of some people), and also a variable of the region where the respondents live (see Appendix A.1 for a description of these variables). The estimated Gini (-2.700, with a standard error of 1.410; marginal effect -1.02) is statistically significant at the 5 percent level. We can not reject the null of weak exogeneity (p-value of Wald test is 0.23), and our instruments also pass the Sargan overidentification test (p-value=0.07).

## 5 Different impacts of heterogeneity for the rich and the poor

Next, let us see whether the effect of heterogeneity holds across households with different wealth levels or if there is a systematic tendency for the rich or the poor to drop out/be excluded from groups (see La Ferrara, 2002a) and informal networks when heterogeneity increases. Our main conjecture

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<sup>41</sup>Additionally, we introduce the group participation dummy as an explanatory variable in the network participation regression. The variable turns out positive but significant only at the 10 percent level. To see whether group participation is influenced by involvement in an informal private network, we introduce the informal network proxy (and some different specifications, e.g., log of number of reported lenders) in the group regressions. None of these had a significant impact on group participation.

<sup>42</sup>The other heterogeneity measures could suffer from the same potential problem, but we believe that these concerns are not very important. Obviously, the same potential concern could apply to informal network participation, but we disregard it. We find it notoriously difficult to find good instruments in this case. Also, remember that our network definition implies risk-sharing, without excluding the altruistic explanation.

is that participation in groups in Romania may be less attractive for the relatively poor individuals since they feel isolated or may have less to gain from participating (hence participation will be more likely for the elite). At the same time, if the informal network theory is right, a priori we expect that the relatively poor would want to be a part of informal networks, since they should benefit more in the case of a negative shock (i.e., illness, funeral costs, flooding).

In Table 6 we estimate the impact of our heterogeneity measures separately for the "relatively poor" (Columns G[1], N[1]) and for the "relatively rich" (Columns G[2], N[2]). We only report the Gini and ethnic fractionalization, while we include in our simple probits all individual and community characteristics as in Table 4, Columns 2 and 4. We define "relatively rich" and "relatively poor" in two different ways (A and B) to further understand the mechanism underlying the effect of heterogeneity on group and informal network membership.

We first consider the "objective" definition of wealth (A): for each community we calculate the wealth quartiles and split the sample between those below the average consumption (Columns G[1], N[1]) and those above (Columns G[2], N[2]). The Gini has a negative and significant impact on *group* participation among the relatively poor households, but not a significant influence among the richer, implying that *the poorer households (i.e., poorer than average) living in more unequal communities are less likely to be part of a group*. This is evidence that since the economic gains from participation in groups are asymmetric and when inequality increases (i.e., from relatively egalitarian communities during the Communist period to a strikingly unequal nowadays) is quite plausible that the poorer are excluded from the formal activities or choose not to participate since they either have less to gain or feel isolated.<sup>43</sup> This result is contrary to what La Ferrara (2002b) found for Tanzania, i.e., an increase in inequality will most likely cause the relatively rich to drop out of groups. When we turn to the informal networks, it seems that heterogeneity

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<sup>43</sup>"Before people were not layered as such in these categories (i.e., groups). Now the Forest Association also associates itself only with the rich, and everyone else is excluded. This is our world today" (in-depth interview, Amelina et al., 2004).



does not matter. We consider as well the *friendship* dimension of informal networks (Column N[1\*] for the relatively poor).<sup>44</sup> The results are quite unexpected: when inequality increases *the poorer than average are still less likely to be part of an informal network*. Overall, it seems that the relatively poor are excluded from/not part of either groups or informal networks.

Moreover, we find that ethnic fragmentation has a positive and significant effect (at the 10 percent level) on the friendship dimension of informal network participation, suggesting that *when ethnic heterogeneity increases, the poorer than average are more likely to have an informal network of friends*. This is probably due to the endogeneity of informal network formation (along ethnic lines).

Table 6: Heterogeneity and participation in groups and informal networks

	Relatively 'poor' G[1]	Relatively 'poor' N[1]	Relatively 'rich' G[2]	Relatively 'rich' N[2]	Relatively 'poor' N[1*]
<i>A. Objective wealth</i>					
<b>Gini</b>	-0.623*** (0.254)	0.432 (0.263)	0.237 (0.264)	-0.354 (0.2809)	-0.195** (0.098)
Ethnicity	-0.015 (0.119)	0.015 (0.199)	-0.110 (0.158)	-0.104 (0.151)	0.157** (0.077)
Heterog. activity	0.092 (0.497)	-0.871* (0.514)	0.508 (0.503)	-0.554 (0.341)	-0.809*** (0.322)
<i>B. Subjective wealth</i>					
<b>Gini</b>	-0.548** (0.168)	0.075 (0.219)	0.190 (0.445)	0.485* (0.271)	-0.153** (0.064)
Ethnicity	-0.096 (0.120)	-0.032 (0.137)	-0.122 (0.208)	-0.345** (0.147)	0.091* (0.055)
Heterog. activity	-0.036 (0.527)	-0.860** (0.420)	0.013 (0.339)	-0.013 (0.339)	-0.227* (0.132)

NOTE 1. \*, \*\*, and \*\*\* denote significance at the 0.10; 0.05; and 0.01 level, respectively.

NOTE 2. Marginal probit coefficients calculated at the means. Standard errors corrected for heteroskedasticity and clustering the residuals at the village level.

NOTE 3. Each cell reports the estimated Gini coefficients and ethnic fragmentation from a separate regression. All regressions include individual, community and region controls as in Table 4. We look at group participation (Columns G[1], G[2]) and informal network participation (Columns N[1], N[2]). Column N[1\*] looks at the friendship dimension of informal network.

There could be some unobservable individual characteristics uncaptured by the *objective wealth* definition that could influence participation in groups and informal networks. We therefore define a *subjective wealth* measure (B)

<sup>44</sup>For the relatively rich we can't find any of the heterogeneity measures significant at any conventional level, so we did not include the results (which are available upon request).

by capturing respondents' satisfaction with respect to the financial situation of their households. The relatively poor (columns G[1], N[1]) are individuals who reported 6 or less (on a scale from 1 - 10) when asked: "How satisfied are you with the financial situation of your household?", while the relatively rich (Columns G[2], N[2]) are respondents who reported 7 or above. The results are essentially in line with the ones obtained for objective wealth, but there is one difference that concerns informal network the average, then *the higher the inequality, the more likely he is to be involved in an informal network*. This is significant at 10 the percent level. Also, the ethnic fragmentation index is negative and significant at the 5 percent level, suggesting that participation in informal networks *is lower in more ethnically fragmented communities*. This effect is significant even when we do not control for Gini and other heterogeneity measures. These results suggest that when inequality increases, the relatively rich households have a higher likelihood of having an informal network, i.e. more people who could lend them money informally. Moreover, those satisfied with their financial situation decrease their participation in more ethnically fragmented communities, probably suggesting that the rich can afford to interact with members of their own ethnic type.

Overall, a few comments are in line with regard to the results in Table 6. Our findings provide evidence that when inequality increases, the relatively poor individuals (objectively or subjectively defined) have a lower likelihood of participating in groups. There are two explanations to this: the poor in Romania have less to gain from participating in groups (which means that the "benefits" from participating are important), and they feel isolated from the groups that used to be "open" to them. At the same time, the relatively poor are not part of informal networks of friends, meaning that they are less likely to benefit from any risk-sharing arrangement, leaving them more exposed to negative shocks.

## 6 Types of groups

Another important question is whether one can find the same pattern across different groups. Since groups range from trade unions, political parties, and

ROSCAs to church organizations, we divide them into two big categories: the Olson and Putnam groups (see also Knack and Keefer, 1997).

Olson (1982) argues that "distributional coalitions" may have a negative impact on economic performance (e.g., by lobbying the government for subsidies, tax cuts/exemptions, or competition-inhibiting regulations). The "Olsonian" group is a dummy equal to 1 if a respondent belonged to at least one of the following: a trade union, a political party, a professional association, a traders/business association, or an owners' association. Almost 22 percent of our respondents belong to at least one of these groups. On the other hand, Putnam's groups relate more to personal beliefs, social interactions, and are more likely to build trust and boost economic performance (see Putnam, 1983). Putnam's group is a dummy taking the value 1 if a respondent was a member of at least one the following: a church/parochial group, a cultural or sport association, a parents' committee, or a ROSCA type group. Twelve percent of our respondents did. The probit marginal coefficients for each type of group are presented in Table 7. As usual, our regressions include all individual and community characteristics listed in Table 4, but since the results are quite similar, we only report the heterogeneity variables.

Table 7: Participation by type of group

	Putnam Group	Olson Group
Gini	0.016 (0.080)	-0.395* (0.241)
Heterog ethnicity	-0.104** (0.052)	-0.054 (0.396)
Heterog activity	0.025 (0.193)	0.435 (0.337)
Control variables	yes	yes
Number of observations	2,214	2,214
Pseudo Rsq	0.056	0.072

NOTE: \*, \*\*, and\*\*\* denote significance at the 0.10, 0.05 and 0.01 level. Marginal probit coefficients calculated at the means. Standard errors corrected for heteroskedasticity and clustering of the residuals at the community level.

Individual controls: all those listed in Table 4.

*What patterns should we expect?* Since Putnam's groups are based on a high degree of interaction (see also Table 3), they may tend to build trust and cooperative habits among members. If we assume that people like to interact

with similar others, we expect heterogeneity to have a negative influence on group participation (Alesina and La Ferrara, 2000). On the other hand, membership in more redistributive groups such as political parties and trade unions is not based on a high degree of (close) social interaction but rather may represent the interests of certain elites. Hence, a priori, we expect inequality to also influence involvement in such groups negatively.

In line with the above assumptions, it comes as no surprise that ethnic heterogeneity has a negative impact on membership in Putnam's groups, *suggesting a lower participation rate in activities involving close social interactions in more ethnically fragmented communities*. Gini does not influence participation in the Putnam groups significantly, while Gini has a negative and significant effect when we look at the Olsonian groups. Alternatively, we have considered the Olsonian groups without the political parties (i.e., Gini is -0.459 with a standard error of 0.225, and is significant at 5 percent level).

We also run two bivariate probits and find that the estimated correlation coefficients  $\rho$  are positive and statistically significant.<sup>45</sup> Hence, it can be inferred from the estimated  $\rho$  that participation in formal groups and informal networks is not so diverse after controlling for the observed characteristics, suggesting a possible overlapping of the participation decision. This is especially the case when we consider participation in Putnam's groups which imply a higher degree of interaction and are highly based on trust. In particular, the likelihood of observing a household both as part of a group and a network is positive. Nonetheless, as we mentioned before, we need to be cautious since the correlation between the error terms by omitted variables.

## 7 Urban vs. rural

Finally, we consider participation separately for urban and rural areas. This is important since our "community" definition includes both small localities

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<sup>45</sup>I.e.,  $\rho$  is 0.106 with a standard error of 0.054, and is significant at the 5 percent level when we look at the Putnam groups and informal network, while  $\rho$  is 0.060 with a standard error of 0.035, and significant at the 10 percent level when we look at the Olson groups and informal network (results available upon request).

(i.e., communes and villages) and larger localities (i.e., cities). We are interested in understanding whether our results hold separately for cities (whose organization is similar to that of cities in Western countries) and rural areas (which resemble developing countries).

*Rural:* Gini has a negative and significant influence on group participation in rural areas, while the other heterogeneity measures do not have a significant impact. None of our heterogeneity variables turns out significant for the informal network. However, when considering the friendship dimension we find again that higher inequality in one's village has a negative and significant impact on the probability of having an informal network (i.e., a friend to rely on in case of need).<sup>46</sup>

*Urban:* Our findings for urban communities are quite different. Gini is insignificant for both groups and networks participation. The only heterogeneity that seems to matter is ethnicity: increased ethnic fractionalization has a negative effect on group participation (-0.324\*\*\* (0.114)), and a positive effect on the likelihood that one has an informal network, whether proxied by potential informal lenders (0.347\*\*(0.138)) or friends (0.144\*\*\* (0.049)).

## 8 Conclusions and Policy Implications

In this paper we have attempted to understand the determinants of participation in groups and informal networks in a country that has experienced a period of rapid changes, including large economic and social shocks, after a long period of drastic dictatorship. One main result points towards a negative correlation between inequality and participation in groups. Also, women are less likely to participate in groups, while older people are progressively more involved in groups than younger. We find the opposite results for participation in informal networks (whether proxied by informal lenders or friends): the younger cohorts are more likely to belong to informal networks.

We find that heterogeneity affects poor and rich people differently: when

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<sup>46</sup>Gini for group is -0.687(0.354), significant at the 5 percent level, and -0.246(0.053), significant at the 1 percent level for informal network. The overall results are available upon request.

inequality increases, it is the *relatively poor* who do not participate in groups or informal networks. This holds regardless of whether we use subjective or objective wealth measures. Our interpretation is that the economic gains from participation in groups are asymmetric. When inequality increases (from relatively egalitarian communities during the Communism period), the poorer choose not to participate since they have less to gain. In other words, participation in groups seems to be more linked with the elite, who benefit more.

The impact of inequality on participation in *informal networks* is intriguing: We find a negative influence for the relatively poor. The reason could be that the poor are not able to contribute, or that when they receive a bad shock it tends to persist over a long period, making them unsuitable to be offered membership in a risk-sharing arrangement. At the same time, the better-off participants may opt out of the informal networks to avoid facing the possibility of having to systematically redistribute to others.

We also find that ethnic heterogeneity has a negative impact on membership in groups that involve close social interactions, such as church, cultural, and sports groups.

Overall, this paper argues that both individual characteristics and heterogeneity at the community level matter for group and informal network membership. If the economic theory of poverty traps is right, then the ability of the poor to insure themselves against hardship becomes a main determinant of longer-term poverty alleviation. We find that the poor are less likely to be involved in groups and networks, while the rich are more likely, suggesting a possible elitist composition of both groups and informal networks. Future research is needed to better understand the mechanisms through which individual characteristics and community heterogeneity influence an individual's incentives to participate in groups and networks. Also, better data (e.g., dyadic data) would help us understand more clearly how networks are formed and who is more likely to benefit from participating.

## References

- Alesina, A. and Fuchs-Schundeln, N. (2007). Good bye Lenin (or not?): The effect of communism on people's preferences. *American Economic Review*, forthcoming.
- Alesina, A. and La Ferrara, E. (2000). Participation in heterogeneous communities. *Quarterly Journal of Economics*, 115(3):847–904.
- Alesina, A. and La Ferrara, E. (2005). Ethnic diversity and economic performance. *Journal of Economic Literature*, XLIII:762–800.
- Amelina, M., Chiribuca, D., and Knack, S. (2004). Mapped in or mapped out? The Romanian poor in inter-household and community networks. *The World Bank*.
- Arcand, J.-L. and Fafchamps, M. (2008). Matching in community-based organizations. *Dep of Economics, Oxford University*.
- Bossert, W., D'Ambrosio, C., and Ferrara, E. L. (2006). A generalized index of fractionalization. *Paper presented at the 29th General Conference of The International Association for Research in Income and Wealth, Finland*.
- Coate, S. and Ravallion, M. (1993). Reciprocity without commitment: Characterization and performance of informal insurance arrangements. *Journal of Development Economics*, 70(1):1–24.
- Costa, D. L. and Kahn, M. (2003). Civic engagement and community heterogeneity: An economist's perspective. *Perspectives on Politics*, 1(1).
- Cox, D. and Fafchamps, M. (2006). Extended family and kinship networks: Economic insights and evolutionary directions. *Forthcoming Handbook of Development Economics*.
- Dercon, S. and Weerdt, J. D. (2006). Risk-sharing networks and insurance against illness. *Journal of Development Economics*, 81:337–356.

- Fafchamps, M. (1992). Solidarity networks in pre-industrial societies: Rational peasants with a moral economy. *Economic Development and Cultural Change*, 41:147–174.
- Fafchamps, M. and Gubert, F. (2006). The formation of risk sharing networks. *Forthcoming in Journal of Development Economics*.
- Fafchamps, M. and Lund, S. (2003). Risk-sharing networks in rural Philippines. *Journal of Development Economics*, 71:261–287.
- Ferrara, E. L. (2002a). Inequality and group participation: Theory and evidence from rural Tanzania. *Journal of Public Economics*, 85(2):235–273.
- Ferrara, E. L. (2002b). Self-help groups and income generation in the informal settlements of Nairobi. *Journal of African Economies*, 11(1):61–89.
- Gallagher, T. (2005). Theft of a nation: Romania since communism. Hurst and Company, London.
- Ghatak, M. (2000). Screening by the company you keep: Joint liability lending and the peer selection effect. *Economic Journal*, 110:601–631.
- Greene, W. (2003). *Econometric analysis*. NJ Prentice Hall.
- Howard, M. M. (2003). *The weakness of civil society in post-communist Europe*. Cambridge University Press.
- Karlan, D. (2007). Social connections and group banking. *Economic Journal*, 117:52–84.
- Kligman, G. (1988). *The wedding of the dead: Ritual, Poetics, and Popular Culture in Transylvania*. University of California Press.
- Knack, S. and Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, 112(4):1251–1288.



- MMT (2007). Ancheta asupra dinamicii unor fenomene populationale si emergenta unor stiluri de viata in Romania. *Metro Media Transilvania*.
- Murgai, R., Winters, P., Sadoulet, E., and de Janvry, A. (2002). Localized and incomplete mutual insurance. *Journal of Development Economics*, 67(2):245–274.
- Olson, M. (1982). *The Rise and Decline of nations*. New Haven CT: Yale University Press.
- Platteau, J.-P. (1991). Mutual insurance as an elusive concept in traditional rural communities. *Journal of Development Studies*, 33:764–796.
- Prouteau, L. and Wolff, F.-C. (2007). On the relational motive for volunteer work. *Journal of Economic Psychology*, forthcoming.
- Putnam, R. (1993). *Making Democracy Work: Civil Traditions in Modern Italy*. Princeton: Princeton University Press.
- Rothstein, B. (2005). *Social traps and the problem of trust*. Cambridge University Press.
- Udry, C. (1994). Risk and insurance in a rural credit market: An empirical investigation in Northern Nigeria. *Review of Economic Studies*, 61:495–526.
- Weerdt, J. D. (2004). Risk sharing and endogenous group formation. In Dercon, S., editor, *Insurance Against Poverty*. Oxford University Press.

# A Appendix

## A.1 Summary statistics

	Mean	Std.Dev.
<i>Household (hh) head characteristics:</i>		
Age (the age of the hh head)	52.09	15.90
Female-headed households	0.51	0.49
Number of children under 18 in the hh	0.57	0.86
Household size (number of household members)	3.03	1.55
<i>Education (proportion of hh heads with):</i>		
Elementary school or none	0.12	0.32
Secondary school	0.25	0.43
High school/professional school	0.40	0.49
Post high school/Short term college	0.12	0.32
University or more	0.10	0.30
Health shock (a dummy= 1 if the hh state of health has worsened during the last 3 years)	0.45	0.49
Health (a dummy=1 if the hh present health condition is very good or good)	0.55	0.49
Average expenditure in community (mean of log household expenditures in the community)	17.59	0.42
ln household expenditures	17.6	0.86
ln (pop) in community (logarithm of locality population. Source: 2002 Census)	10.35	1.84
Gini (Gini computed from household expenditure)	0.39	0.09
Ethnic fragmentation (probability that two random individuals from the same locality /community belong to different ethnic categories. Source: 2002 Census)	0.17	0.14
Heterog. activity (probability that two random individuals from the same locality /community have different economic activities. Source: 2002 Census)	0.64	0.04
Heterog. education (probability that two random individuals from the same locality /community have similar levels of education. Source: 2002 Census)	0.49	0.07
Urban	0.61	0.49
<i>Regions:</i>		
North-East	0.16	0.36
South -East	0.14	0.36
South-Muntenia	0.15	0.35
South-West	0.13	0.34
North-West	0.21	0.40
Centrum	0.15	0.36
Bucharest	0.05	0.21
Tourist area (a dummy=1 if the locality is in a tourist area. Source: INSSE, 2002)	0.49	0.50
Distance from the main market (town)	8.41	13.44
Average temperature (The average temperature in degrees C in 2004. Source: INSSE, Statistical Yearbook, 2005. This is the temperature in the county, and not at the locality level)	10.08	1.31
Community "geographic" variable (The place where the interviewee lives can be described as 1. an important city, with over 300,000 inhabitants, to 10. a village, not a commune center (i.e., more isolated).)	5.29	2.92

## A.2

Table 8: Informal Network: Friends and Informal Lenders

	Informal lenders - yes	Informal lenders - no	Total
Friends - yes	1,434 (64.7%)	654 (29.5%)	2,088 (94.3%)
Friends - no	39 (1.8%)	87 (3.9%)	126 (5.7%)
Total	1,473 (65%)	778 (35%)	2,214 (100%)

Table 9: Cross Tabulation: Realized vs Potential Network

	Potential=0	Potential=1	Total
Realized=0	533 (24%)	927 (42%)	1,460 (66%)
Realized=1	208 (9.3%)	546 (24.7%)	754 (34%)
Total	741 (33.3%)	1,473 (66.7%)	2,214 (100%)

Table 10: Cross Tabulation: Formal Group and Informal Network

	Group=0	Group=1	Total
Network=0	527 (24%)	214 (9.5%)	741 (33.5%)
Network=1	909 (41%)	564 (25.5%)	1,473 (66.5%)
Total	1,436 (65%)	778 (35%)	2,214 (100%)

### A.3

Table 11: Group and informal network participation - Marginal coefficients

	$P(0,1)$ Group=0,Network=1 [1]	$P(1,1)$ Group=1,Network=1 [2]
Female	0.050*** (0.018)	-0.050*** (0.017)
Age 31-41	-0.097*** (0.033)	0.019 (0.030)
Age 42-52	-0.106*** (0.032)	0.009 (0.029)
Age 53-62	-0.140*** (0.035)	0.026 (0.033)
Age 63 or older	-0.191*** (0.036)	0.069** (0.034)
Household size	0.013 (0.008)	-0.014** (0.007)
No. of children under 18	-0.043*** (0.015)	0.019 (0.012)
Worker	-0.023 (0.024)	0.074*** (0.022)
Health shock	-0.057*** (0.019)	-0.036** (0.014)
<i>Education</i>		
Secondary school	0.060* (0.032)	0.040 (0.028)
Secondary Technical High School	0.049 (0.034)	0.121*** (0.034)
Post High School	0.093** (0.042)	0.156*** (0.041)
University	0.011 (0.046)	0.243*** (0.046)
1st expenditure quartile	-0.017 (0.026)	-0.058*** (0.022)
4th expenditure quartile	0.004 (0.024)	0.115*** (0.019)
Avg. expenditure in community	0.073 (0.066)	-0.059 (0.062)
Gini	0.354*** (0.131)	-0.246** (0.110)
Heterog. ethnicity	0.062 (0.083)	-0.086 (0.068)
Heterog. occupation	-0.649** (0.257)	0.054 (0.274)
ln (pop) in community	-0.022** (0.010)	-0.003 (0.011)
Regions and urban	yes	yes
Number of observations	2,214	2,214

NOTE: \*, \*\*, and \*\*\* denote significance at the 0.10, 0.05 and 0.01 level.  
Marginal probit coefficients calculated at the means. Standard errors corrected for heteroskedasticity and clustering of the residuals at the community level.

# **Paper III**



# Do Private and Public Transfers Affect Life Satisfaction? Evidence from Romania <sup>#</sup>

Andreea Mitrut <sup>†</sup> and François-Charles Wolff <sup>‡</sup>

## 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

**JEL classification:** D12, D64, I31

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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.<sup>1</sup> 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.

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<sup>1</sup> 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).



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

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<sup>2</sup> 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 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).

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 before.<sup>3</sup> 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.<sup>4</sup> 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.

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<sup>3</sup> 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.

<sup>4</sup> 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.

The rest of the paper is organized as follows. Section 2 describes the data, and we use nonparametric regressions to study the link between satisfaction and income. Section 3 presents the main determinants of life and financial satisfaction in Romania. In Section 4, we focus on the role of private and public transfers received on individual life satisfaction and account for their potential endogeneity in the estimation. In Section 5, we study whether making private transfers to others enhance happiness. Section 6 concludes the paper.

## **2. Data and descriptive statistics**

### **2.1 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.<sup>5</sup> In 2001, Romania spent only 13.1% of its GDP on social protection, which was less than half of most EU countries.<sup>6</sup> 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

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<sup>5</sup> 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).

<sup>6</sup> 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.

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 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 (Maginean et al., 2004).

## **2.2 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).

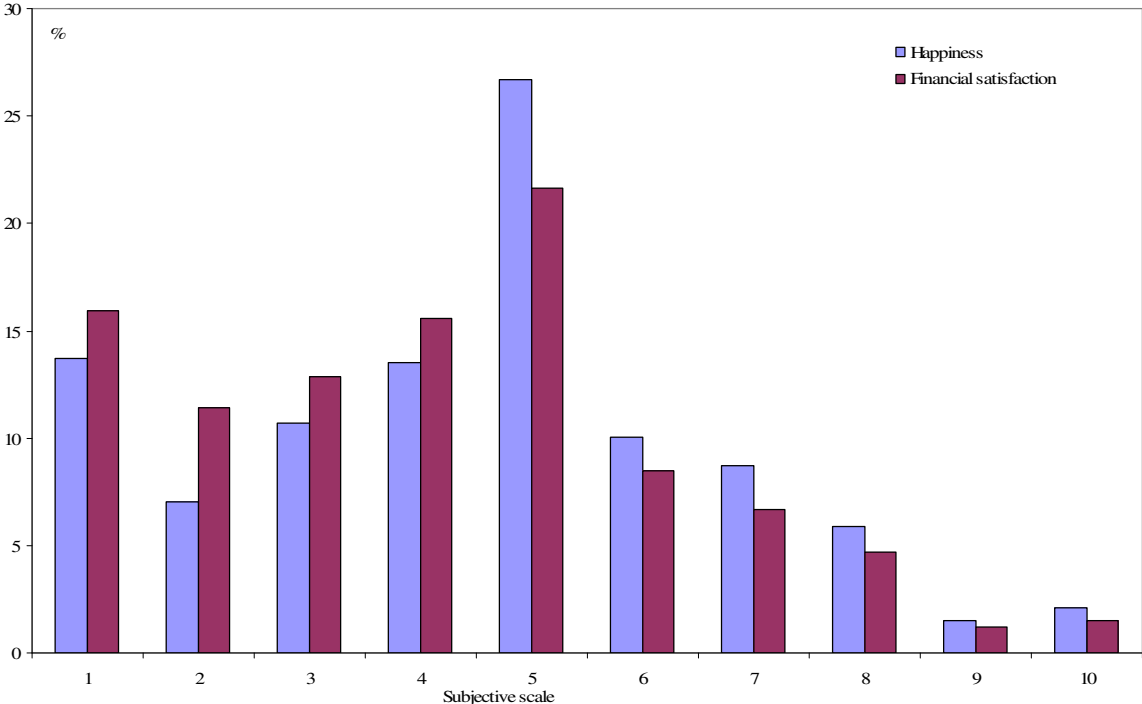
Two comments are in order. First, while we mainly focus on the life satisfaction determinants, we make use of both questions in order to compare the relative influence of transfers and private income on life and financial satisfaction. Second, while our measure of financial satisfaction is clearly at 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.<sup>7</sup>

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<sup>7</sup> 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.

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 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%).

**Figure 1. The distribution of life satisfaction and financial satisfaction**



Source : Romanian TSCS, 2003.

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).

**Table 1. Descriptive statistics of the sample**

Variables	Life satisfaction			All
	Low	Medium	High	
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).

According to Table 1, respondent characteristics strongly influence the responses to the life satisfaction question.<sup>8</sup> 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.

### 2.3 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.<sup>9</sup>

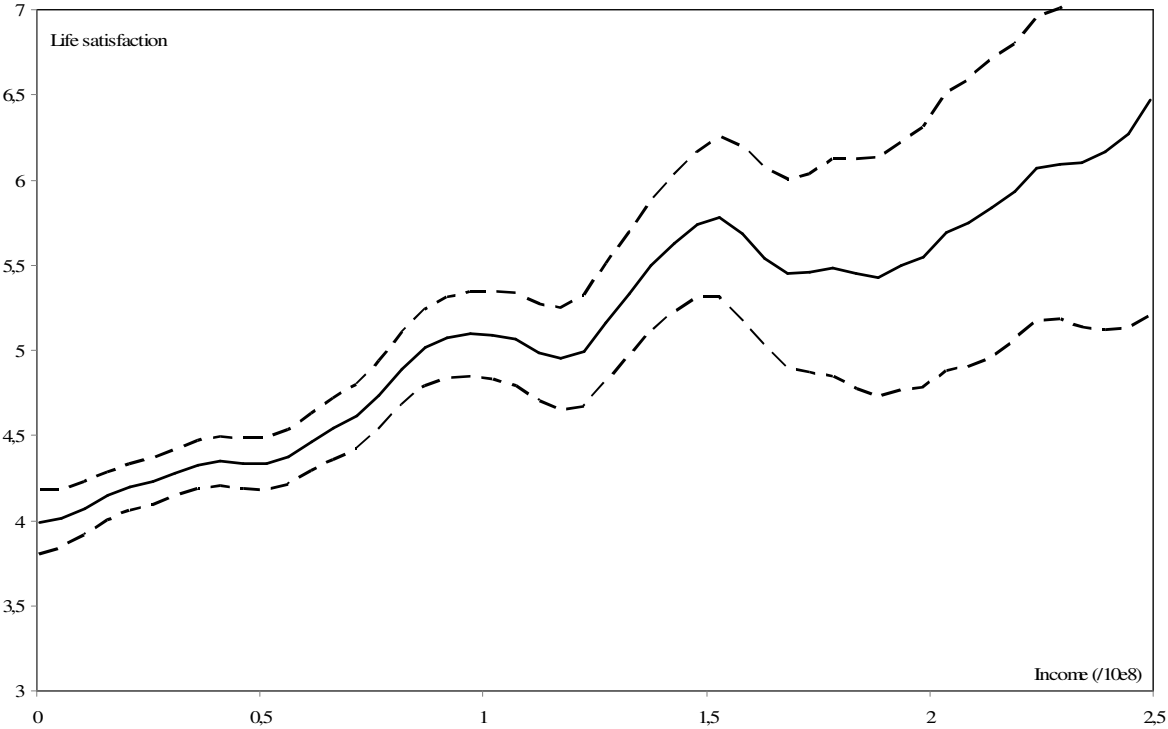
<sup>8</sup> We only present the descriptive statistics for life satisfaction. The results are similar for financial satisfaction.

<sup>9</sup> We get very similar results when using a per capita measure of household income.

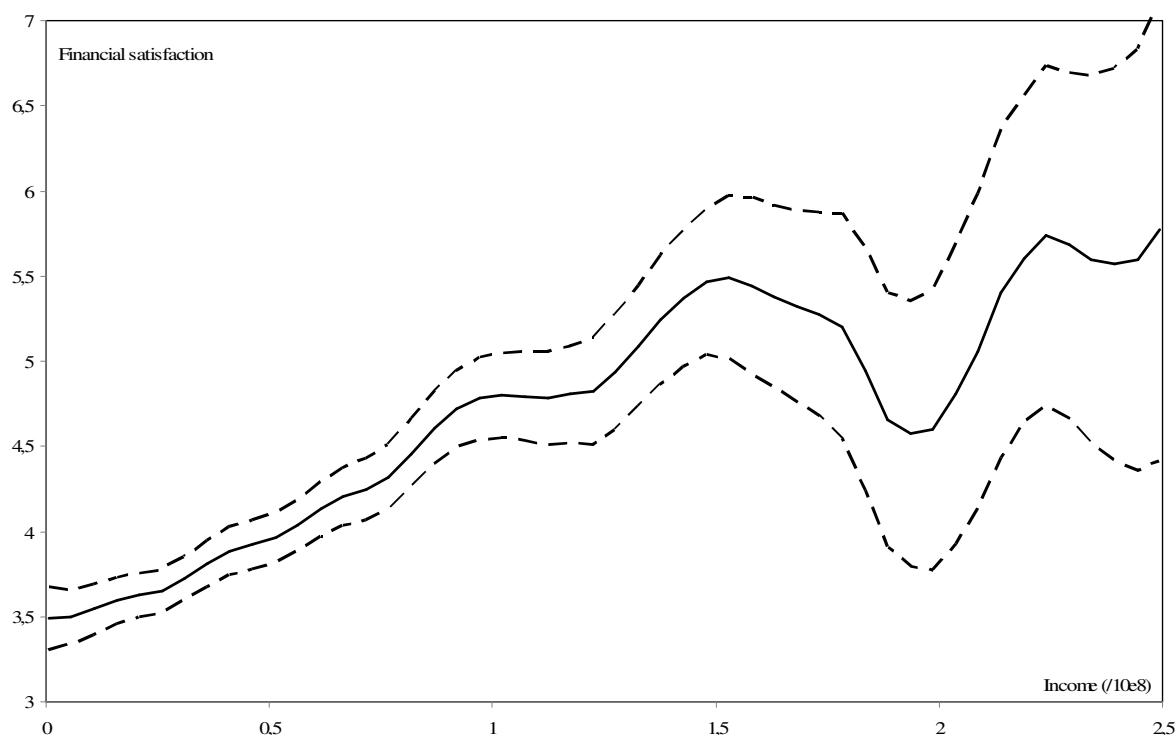
We find an increasing profile for life satisfaction all over the income distribution (Figure 2A). This result is also clear in Table 1, since the respondents in the highest category of satisfaction are characterized by a mean level of income that is about 1.7 times higher than that of the respondents 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.

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.

**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.

As in Table 1, we calculated the mean levels of resources as a function of the low, medium, and high categories of financial satisfaction.<sup>10</sup> 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).<sup>11</sup> 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

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<sup>10</sup> Results are available upon request.

<sup>11</sup> All calculations are performed at the aggregate level, meaning that we account for all individuals included at a given level of satisfaction.



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 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.

### 3. 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  $\mu_{L1} < Y_L^* \leq \mu_{L2}, \dots$ , and  $Y_L = 10$  when  $Y_L^* > \mu_{L9}$ , where  $\mu_{L1}, \dots, \mu_{L9}$  are a set of threshold parameters to estimate. Under the normality assumption of the residual  $\varepsilon_L$ , 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.<sup>12</sup>

**Table 2. The determinants of life satisfaction and financial satisfaction**

Variables	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction	Financial satisfaction
Head female	0.099** (0.048)	0.100** (0.048)	0.098** (0.048)	0.120** (0.048)
Age	-0.031*** (0.009)	-0.031*** (0.009)	-0.031*** (0.009)	-0.037*** (0.009)
Age squared (/100)	0.037*** (0.009)	0.036*** (0.009)	0.037*** (0.009)	0.039*** (0.009)
In couple	0.143*** (0.055)	0.148*** (0.055)	0.146*** (0.055)	0.294*** (0.056)
Household size	-0.005 (0.014)	0.001 (0.014)	-0.006 (0.014)	-0.008 (0.014)
Education				
Secondary (ref : no education or primary)	0.101 (0.077)	0.100 (0.077)	0.099 (0.077)	0.099 (0.078)
Gymnasium	0.160* (0.092)	0.161* (0.092)	0.160* (0.092)	0.140 (0.093)
High school/Vocational school	0.265*** (0.090)	0.270*** (0.090)	0.264*** (0.090)	0.231** (0.090)
Post high school	0.441*** (0.100)	0.449*** (0.100)	0.442*** (0.100)	0.448*** (0.100)
University or more	0.463*** (0.106)	0.483*** (0.106)	0.456*** (0.106)	0.559*** (0.106)
Health				
Poor (ref : very good or good)	-0.499*** (0.052)	-0.500*** (0.052)	-0.503*** (0.052)	-0.459*** (0.052)
Very poor	-0.959*** (0.078)	-0.959*** (0.078)	-0.961*** (0.078)	-0.883*** (0.078)
Working	0.031 (0.060)	0.038 (0.060)	0.036 (0.060)	-0.028 (0.061)
Unemployed	-0.281** (0.120)	-0.286** (0.120)	-0.281** (0.121)	-0.359*** (0.122)
Net income (/10 <sup>8</sup> )	0.062*** (0.177)		0.062*** (0.018)	0.073*** (0.018)
Net income per capita (/10 <sup>8</sup> )		0.086** (0.340)		
Living in an urban area	-0.269*** (0.052)	-0.263*** (0.052)	-0.278*** (0.052)	-0.206*** (0.052)
Coefficient of correlation			0.700 (0.012)	
Test: [happiness coef = financial coef]			Chi <sup>2</sup> (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.

<sup>12</sup> 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.

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.<sup>13</sup>

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.<sup>14</sup>

We find a positive effect of income; i.e., money does increase life satisfaction. Similar conclusions have been reached by Andr n 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:

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

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<sup>13</sup> 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.

<sup>14</sup> 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  $Y_L = j$  when  $\mu_{Lj} < Y_L^* \leq \mu_{Lj+1}$  and  $j = 1, \dots, 10$ ,  $Y_F = k$  when  $\mu_{Fk} < Y_F^* \leq \mu_{Fk+1}$  and  $k = 1, \dots, 10$ . We assume that the residuals  $\varepsilon_L$  and  $\varepsilon_F$  follow a bivariate normal distribution with unitary variances and an unknown coefficient correlation  $\rho$  to be estimated. For a given observation, the log likelihood may be expressed as:

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

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  $\Phi_2(\cdot)$ . The coefficient  $\rho$  sheds light on the correlation between the unobservable  $\varepsilon_L$  and  $\varepsilon_F$ .

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.<sup>15</sup> 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.<sup>16</sup>

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

<sup>16</sup> 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.

## **4. The role of private and public transfers received on life satisfaction**

### **4.1 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 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.

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.<sup>17</sup>

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

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<sup>17</sup> 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.

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.

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

Variables	(1)	(2)	(3)	
	Life satisfaction	Life satisfaction	Life satisfaction	Financial satisfaction
Head female	0.107** (0.048)	0.104** (0.048)	0.106** (0.048)	0.136*** (0.048)
Age	-0.033*** (0.009)	-0.035*** (0.009)	-0.033*** (0.009)	-0.040*** (0.009)
Age squared (/100)	0.037*** (0.009)	0.039*** (0.009)	0.038*** (0.009)	0.040*** (0.009)
In couple	0.137** (0.056)	0.134** (0.056)	0.140** (0.056)	0.285*** (0.056)
Household size	-0.014 (0.015)	-0.014 (0.015)	-0.015 (0.015)	-0.026* (0.015)
Education      Secondary (ref : no education or primary)	0.087 (0.078)	0.086 (0.078)	0.085 (0.078)	0.073 (0.078)
Gymnasium	0.140 (0.093)	0.134 (0.093)	0.139 (0.093)	0.102 (0.093)
High school/Vocational school	0.235*** (0.091)	0.235*** (0.091)	0.234** (0.091)	0.177* (0.091)
Post high school	0.407*** (0.102)	0.406*** (0.102)	0.407*** (0.102)	0.386*** (0.102)
University or more	0.403*** (0.110)	0.407*** (0.110)	0.396*** (0.110)	0.453*** (0.110)
Health          Poor (ref : very good or good)	-0.498*** (0.052)	-0.501*** (0.052)	-0.502*** (0.052)	-0.456*** (0.052)
Very poor	-0.954*** (0.078)	-0.955*** (0.078)	-0.955*** (0.078)	-0.875*** (0.078)
Working	0.069 (0.065)	0.068 (0.065)	0.074 (0.065)	0.047 (0.065)
Unemployed	-0.236* (0.123)	-0.234* (0.123)	-0.236* (0.123)	-0.276** (0.124)
Non-transfer income (/10 <sup>6</sup> )	0.069*** (0.018)	0.068*** (0.018)	0.069*** (0.018)	0.080*** (0.018)
Public transfers received (/10 <sup>6</sup> )	0.309** (0.142)	0.306** (0.142)	0.310** (0.142)	0.535*** (0.142)
Private transfers received (/10 <sup>6</sup> )	0.067 (0.077)		0.067 (0.077)	0.111 (0.077)
Net transfer (/10 <sup>6</sup> )		-0.091 (0.075)		
Living in an urban area	-0.281*** (0.053)	-0.276*** (0.053)	-0.290*** (0.053)	-0.228*** (0.053)
Coefficient of correlation			0.699 (0.012)	
Test:[life coefs = financial coefs]			Chi <sup>2</sup> (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.

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 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.

#### **4.2 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.<sup>18</sup> Again, a different pattern may occur under exchange, with the possibility of a crowding-in effect (Cox and Jakubson, 1995).

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

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<sup>18</sup> 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.



Assume first that the residuals  $\varepsilon_{pu}$ ,  $\varepsilon_{pr}$ , and  $\varepsilon_L$  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. We then include a dummy variable if the respondent is retired, as it influences the receipt of pension. Public transfers also depend on non-transfer income of the household. Private transfers are expected to depend on public transfers; as mentioned, a negative relationship is expected under altruism. We also 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).<sup>19</sup> We finally control for health status in the life satisfaction equation since we know that it has a strong negative effect on happiness (see Table 2). Since it could be argued that health status could also influence public and private transfers received, we have made sure that being in poor health does not play a significant role in the two other equations.

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.

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<sup>19</sup> 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.

**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*** (0.047)	0.213* (0.128)		-0.284*** (0.047)	0.142 (0.128)	
Head female	-0.018** (0.008)	-0.013 (0.026)	0.107** (0.050)	-0.018** (0.008)	-0.032 (0.027)	0.090* (0.052)
Age	0.010*** (0.002)	-0.015*** (0.004)	-0.033*** (0.009)	0.010*** (0.002)	-0.011*** (0.004)	-0.030*** (0.010)
Age squared (/100)	-0.010*** (0.001)	0.011** (0.004)	0.037*** (0.009)	-0.010*** (0.001)	0.009** (0.004)	0.036*** (0.009)
Number of persons 0-6	0.034*** (0.010)			0.034*** (0.010)		
Number of persons 7-14	0.032*** (0.008)			0.031*** (0.007)		
Number of persons 15-61	0.037*** (0.003)			0.038*** (0.003)		
Number of persons >61	0.124*** (0.006)			0.124*** (0.006)		
In couple		-0.038 (0.026)	0.137** (0.056)		-0.046* (0.026)	0.131** (0.057)
Household size		0.002 (0.009)	-0.014 (0.015)		0.016 (0.010)	-0.003 (0.018)
Education Secondary (ref : no education or primary)	0.061*** (0.015)	0.020 (0.046)	0.087 (0.075)	0.061*** (0.015)	0.047 (0.047)	0.110 (0.078)
Gymnasium	0.093*** (0.017)	-0.012 (0.061)	0.140 (0.092)	0.093*** (0.017)	0.027 (0.063)	0.172* (0.096)
High school/Vocational school	0.120*** (0.017)	0.036 (0.053)	0.235*** (0.090)	0.122*** (0.017)	0.087 (0.056)	0.276*** (0.098)
Post high school	0.139*** (0.017)	0.015 (0.062)	0.407*** (0.099)	0.140*** (0.017)	0.077 (0.067)	0.455*** (0.109)
University or more	0.227*** (0.017)	0.092 (0.063)	0.404*** (0.114)	0.230*** (0.017)	0.188** (0.074)	0.479*** (0.137)
Health Poor (ref : very good or good)			-0.497*** (0.052)			-0.498*** (0.052)
Very poor			-0.954*** (0.075)			-0.955*** (0.075)
Working	-0.115*** (0.013)	0.008 (0.035)	0.069 (0.067)	-0.115*** (0.013)	-0.065 (0.044)	0.007 (0.087)
Unemployed	-0.045** (0.022)	0.001 (0.059)	-0.236* (0.136)	-0.047** (0.022)	-0.075 (0.064)	-0.298** (0.146)
Retired	0.155*** (0.013)			0.151*** (0.013)		
Non-transfer income (/10 <sup>8</sup> )	-0.050*** (0.005)	0.011 (0.011)	0.068*** (0.021)	-0.055*** (0.004)	0.006 (0.015)	0.067*** (0.021)
Public transfers received (/10 <sup>8</sup> )		-0.065 (0.076)	0.308** (0.156)		-0.504*** (0.185)	-0.055 (0.348)
Private transfers income (/10 <sup>8</sup> )			0.064 (0.129)			0.072 (0.215)
Number of potential informal lenders		0.005*** (0.002)			0.005** (0.002)	
Living in an urban area	0.047*** (0.010)	0.072** (0.032)	-0.281*** (0.054)	0.047*** (0.010)	0.088*** (0.033)	-0.266*** (0.055)
Correlation of public transfers with ...		0.000	0.000		0.200*** (0.075)	0.063 (0.055)
of private transfers with ...		-	-			0.008 (0.054)
Number of observations		2,294			2,294	
Log likelihood		-5115.8			-5107.9	

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.

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 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.<sup>20</sup>

#### **4.3 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.<sup>21</sup> 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

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<sup>20</sup> 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).

<sup>21</sup> 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.

lenders is positively correlated with the amount of transfer received, and this amount is also larger when the respondent lives in an urban area.

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 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.<sup>22</sup> 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.<sup>23</sup>

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.

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<sup>22</sup> 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).

<sup>23</sup> 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).

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 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.

### **5. 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.<sup>24</sup> 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.<sup>25</sup> An increase in a child's happiness through increased resources has a positive effect on his/her parent's happiness.

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<sup>24</sup> 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.

<sup>25</sup> 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.

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 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.<sup>26</sup> 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.

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.

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<sup>26</sup> 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.

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

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

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

levels.<sup>27</sup> 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.<sup>28</sup>

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).<sup>29</sup> 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

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<sup>27</sup> 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%.

<sup>28</sup> 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.

<sup>29</sup> 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.

## 6. 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.

## References

- Adams, R. (2006). "Remittances and poverty in Ghana." World Bank Policy Research Paper, no. 3838.
- Alesina, A., Di Tella, R., MacCulloch, R. (2004). "Inequality and happiness: are Europeans and Americans different?" *Journal of Public Economics*, 88: 2009-2042.
- Altonji, J. G., Hayashi, F., and Kotlikoff, L. J. (1997). "Parental altruism and inter vivos transfers: Theory and evidence." *Journal of Political Economy*, 105(6):1121–1166.
- Amelina, M., Chiribuca, D., and Knack, S. (2004). "Mapped in or mapped out? The Romanian poor in inter-household and community networks." The World Bank.
- Andreoni, J. (1990). "Impure altruism and donations to public goods: A theory of warm-glow giving." *Economic Journal*, 100(401):464-477.
- Andreoni, J. (2006). "Philanthropy." In S.C. Kolm, J. Mercier Ythier, *Handbook on the Economics of Giving, Reciprocity and Altruism*, North-Holland, Elsevier.
- Andrén, D. and Martinsson, P. (2006). "What Contributes to Life Satisfaction in Transitional Romania?" *Review of Development Economics*, 10(1): 59-70.
- Barro, R. (1974). "Are Government Bonds Net Wealth?" *Journal of Political Economy*, 82(4): 1095-1117.
- Becker, G. S. (1974). "A theory of social interactions." *Journal of Political Economy*, 82(4):1063-1094.
- Bergstrom, T. (1996). "Economics in a Family Way." *Journal of Economic Literature* 34: 1903-1934.
- Blanchflower, D., and Oswald, A. (2004). "Well-being over time in Britain and the USA." *Journal of Public Economics*, 88: 1359–1386.
- Bonke, J. And Uldall-Poulsen, H. (2007). "Why do families actually pool their income? Evidence from Denmark." *Review of Economics of the Household*, 5(2): 113-128.
- Clark, A., Oswald, A. (1994). "Unhappiness and unemployment." *Economic Journal* 104: 648–659.
- Clark, A., Frijters, P. And Shields, M. (2008) "Relative Income, Happiness and Utility: An Explanation for the Easterlin Paradox and Other Puzzles." *Journal of Economic Literature*, forthcoming.
- Cox, D. (1987). "Motives for private income transfers." *Journal of Political Economy*, 95(3): 508-546.
- Cox, D. (1990). "Intergenerational Transfers and Liquidity Constraints." *Quarterly Journal of Economics*, 105(1):187-217.
- Cox, D. and Jakubson, G. (1995). "The connection between public transfers and private interfamily transfers." *Journal of Public Economics*, 57(1): 129–167.
- Diener, E., Suh, E., Lucas, R., Smith, H. (1999). "Subjective well-being: three decades of progress." *Psychological Bulletin*, 125 (2): 276–303.
- Di Tella, R., and MacCulloch, R. (2006). "Some uses of happiness data in economics." *Journal of Economic Perspectives*, 20(1): 25–46.

- Dimova R., and Wolff F.C. (2008). "Are private transfers poverty and inequality reducing? Household level evidence from Bulgaria." mimeo, Brunel University.
- Dolan, P., Peasgood, T., and White, M. (2008). "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being." *Journal of Economic Psychology*, 29(1): 94-122.
- Easterlin, R., 1974. "Does economic growth improve the human lot? Some empirical evidence." In: David, P., Reder, M. (Eds.), *Nations and Households in Economic Growth: Essays in Honour of Moses Abramovitz*. Academic Press, New York.
- Easterlin, R. (1995). "Will Raising the Incomes of All Increase the Happiness of All?" *Journal of Economic Behaviour and Organization*, 27: 35-48.
- Fafchamps, M. and Lund, S. (2003). "Risk-sharing networks in rural Philippines." *Journal of Development Economics*, 71: 261-287.
- Foster, A and Rosenzweig, M. (2001). "Imperfect Commitment, Altruism, and the Family: Evidence from Transfer Behavior in Low-Income Rural Areas." *The Review of Economics and Statistics*, 83(3): 389-407.
- Frey, B. S. and Stutzer, A. (2002). "Happiness and Economics: How the Economy and Institutions Affect Human Well-Being." Princeton University Press.
- Jensen, Robert. (2003). "Do private transfers 'displace' the benefits of public transfers? Evidence from South Africa." *Journal of Public Economics*, 88: 89-112.
- Kligman, G. (1988). "The wedding of the dead: Ritual, Poetics, and Popular Culture in Transylvania." University of California Press.
- Konow, J. and Earley, J. (2008). "The Hedonistic Paradox: Is *Homo Economicus* Happier?" *Journal of Public Economics*, 92(2): 1-33.
- Laferrère A. and Wolff F.C. (2006). "Microeconomic models of family transfers." In S.C. Kolm, J. Mercier Ythier, *Handbook on the Economics of Giving, Reciprocity and Altruism*, North-Holland, Elsevier.
- Maitra, P. and Ray, R. (2003). "The effect of transfers on household expenditure patterns and poverty in South Africa." *Journal of Development Economics*, 71: 23-49.
- Marginean, I., Precupetu, I., and Preoteasa, A. M. (2004). "Puncte de suport si elemente critice in evolutia calitatii vietii in Romania." *Calitatea Vietii*, 1-2.
- Meier, S. and Stutzer, A. (2008). "Is Volunteering Rewarding in Itself?" *Economica*, 75: 39-59.
- Mitrut, A. and Nordblom, K. (2008). "Motives for Private Gift Transfers: Theory and Evidence from Romania." Working Paper 262, Goteborg University.
- Oswald, A. (1997). "Happiness and economic performance." *The Economic Journal*, 107: 1815-1831.
- Ravallion, M., and Lokshin, M. (2001). "Identifying welfare effects from subjective questions." *Economica*, 68: 335-357.
- Schwarze, J., and Winkelmann, R. (2005). "What can happiness research tell us about altruism? Evidence from the German Socio-Economic Panel." 1487 IZA Discussion Paper.
- Smith, Adam. (1776). "An Inquiry into the Nature and Causes of the Wealth of Nations", ed. Edwin Cannan, London.

Stutzer, A. and Lalive, R. (2004) "The Role of Social Work Norms in Job Searching and Subjective Well-Being." *Journal of the European Economic Association*. 2(4): 696-719.

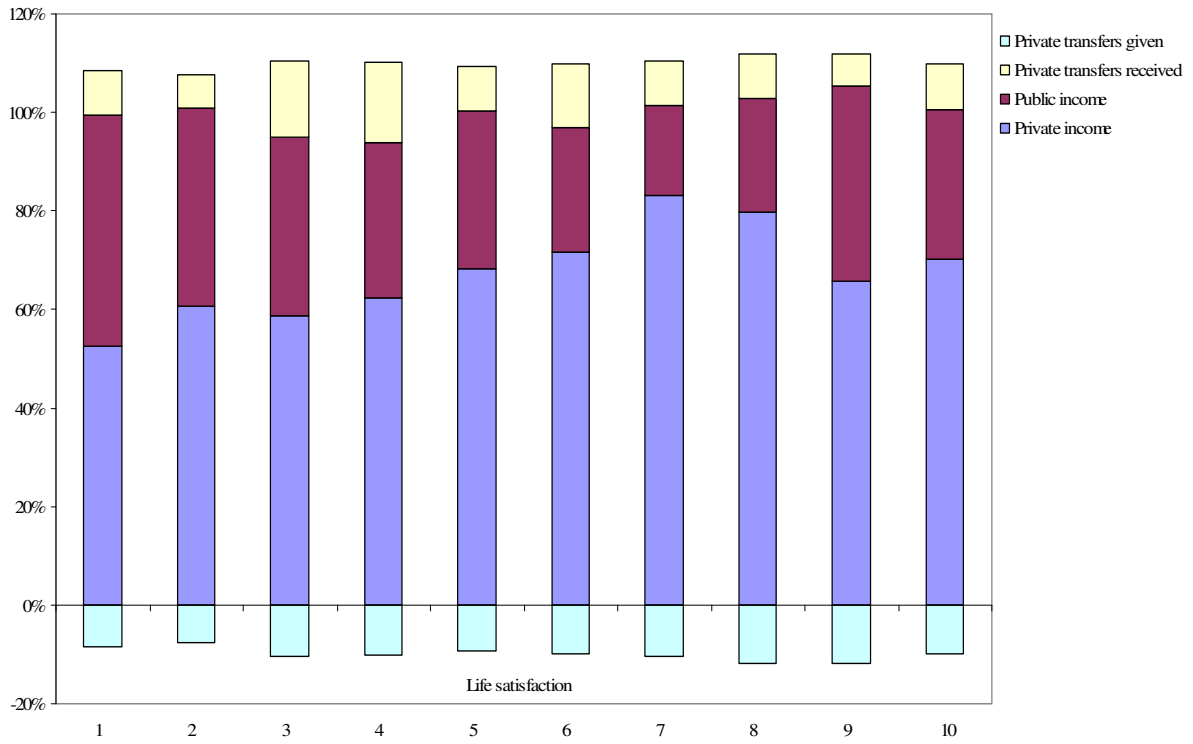
Wilde, J. (2000). "Identification of multiple equations Probit models with endogenous dummy regressors." *Economics Letters*, 69: 309-312.

Wolff, F.C. (2006). "Une mesure de l'altruisme intergénérationnel." *Economie Appliquée*, 59: 5-28.

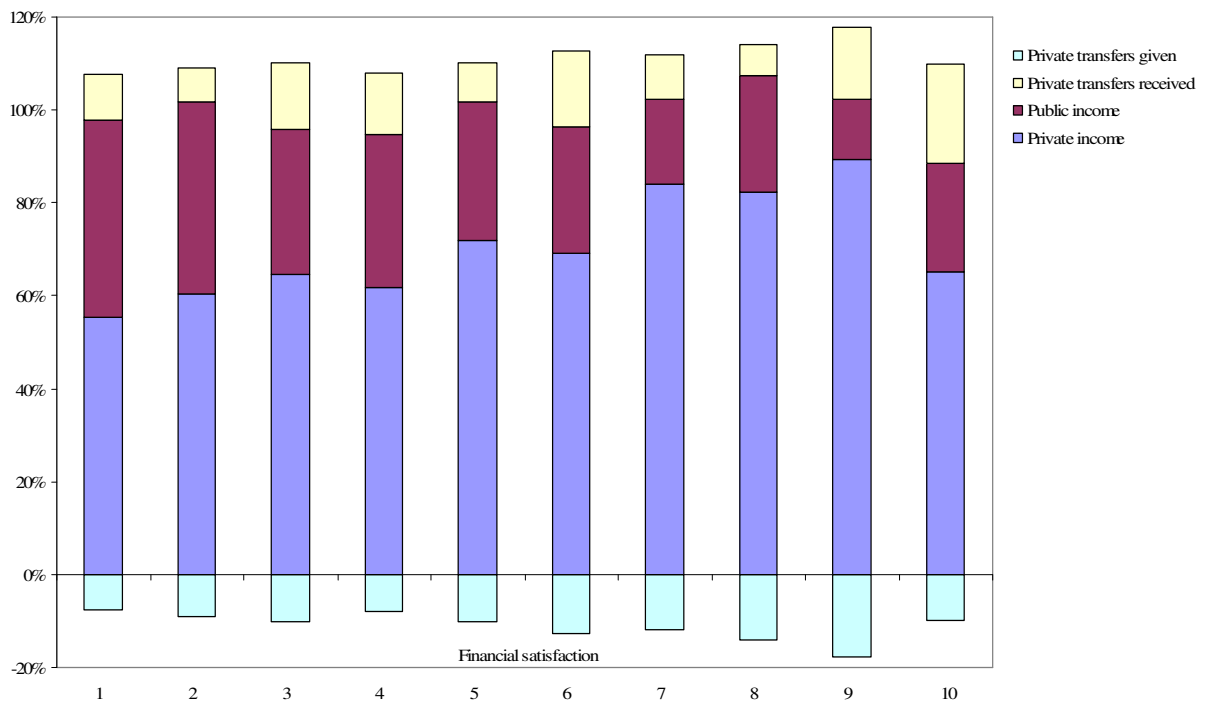
WorldBank (2003). Romania poverty assessment.

## Appendix

**Figure A1. Composition of income and life satisfaction**



**Figure A2. Composition of income and financial satisfaction**





# **Paper IV**





# Behind Closed Doors. School Enrollment of Romanian Institutionalized Children

Andreea Mitrut<sup>†</sup>

## Abstract

Tragic images of Romanian institutionalized children shocked Western audiences when broadcasted for the first time in the early 1990s, immediately after the fall of Ceausescu. We use a unique census that covers all institutionalized children in 1997, and find that institutionalized children are significantly less likely to be enrolled in school compared to their non-institutionalized same-age peers. We identify a special group of institutionalized children: the social orphans, i.e., children who have living parents but no contact with them. We find that among healthy children, those in permanent institutional care, i.e. social orphans and orphans, are significantly less likely to be enrolled in school than non-institutionalized children, while if we only look at children who suffer from a medical problem, we do not find significant differences between the two groups. That is probably because both groups are at high risk of poor education.

*JEL classification:* J13; I38; I20; I30

*Keywords:* Institutionalized children; Child welfare; Education; Health; Romania

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*“Children suffer silently, since they have no voice in the decisions made about their lives. They languish when they have no place to call home.”* (Groza et al., 1999)

## **1. Introduction**

Tragic images of Romanian institutionalized children shocked Western audiences when broadcasted for the first time in the early 1990s, immediately after the fall of the Communist regime. While the magnitude of this phenomenon during the Ceausescu era remains unknown, several sources agree that there were between 100,000-200,000 institutionalized children in the beginning of the 1990s.<sup>1</sup> The complex factors that initiated the rise of child abandonment and institutionalization arose in 1966 when Romanian authorities drastically restricted abortion and made family planning illegal for most women. The tremendously difficult social and economic environment made things even worse in the 1980s.

Despite the fact that abandoned and institutionalized children constitute a very troublesome issue particularly in developing and transitional countries, our knowledge of it remains quite limited since the abandoned children are usually not included in official statistics. This paper, based on a unique census that covers *all* Romanian institutionalized children in 1997, is the first that attempts to shed some light on at least one important dimension – the education of institutionalized children. More exactly, we attempt to understand whether institutionalized children ages 7-15 are under-enrolled in school relative to their non-institutionalized peers.<sup>2</sup>

A large number of studies have used the legalization of abortion in the US in the 1970s to analyze whether abortion availability leads to better child outcomes later on in life.<sup>3</sup> Along a similar line of thought, Pop-Eleches (2006) explores the Romanian cohorts born before and after the 1966 abortion ban (wanted vs. unwanted children), and finds that the cohorts born immediately after the implementation of the abortion ban have a worse

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<sup>1</sup> Accounting for about 2 to 4 percent of the total Romanian population aged 0-18 (UNICEF, 1997).

<sup>2</sup> Of course, even though informative, the enrollment rate is only one dimension of schooling; it does not say anything about attendance, drop out, etc.

<sup>3</sup> Abortion legalization appears to have led to an improvement in the socio-economical outcomes of the cohort of children resulting from pregnancies that could have been legally terminated: they are less likely to live in single-parent families, in poverty, and to receive welfare (Gruber et al., 1999), to die as infants (Grossman and Jacobowitz, 1981), and to become criminals (Donohue and Levitt, 2001). Another strand of studies looks at the outcomes of the children born to women who were denied abortion in Sweden, Finland, and Czechoslovakia (David et al., 1988), and find them to be more likely to achieve only lower levels of education, to be delinquent, and to need treatment for nervous disorders.

educational and labor market outcome, and are more likely to display criminal behavior later in life. Pop-Eleches (2007) analyzes the effect of the 1989 legalization of abortion in Romania and finds evidence of a better educational outcome of the cohorts born after the lift of the ban.

In this paper we investigate the effect of the Romanian abortion ban and lack of family planning during Communism from a different perspective. Undoubtedly, one of the most awful outcomes of this policy is the huge number of institutionalized children. In contrast to Western countries where the child welfare system aims at protecting children from abusive and neglecting parents, it was common in Romania for parents to choose to institutionalize their children, often for indefinite periods of time. We identify three main categories of institutionalized children: 1) children who are institutionalized, but stay in regular contact with their families, 2) orphans, and 3) social orphans, i.e., children in permanent institutional care *known* to have living parents but who have no contact with them.<sup>4</sup>

It is commonly believed that institutionalized children constitute a high-risk population in terms of education (Kurtz et al., 1993). A priori, it is not clear for example whether children who are in the permanent care of the protection system, i.e., orphans and social orphans, are more likely to be enrolled in school than their non-institutionalized peers. In this context it should be noted that the Education Law in Romania stipulates 8 years of compulsory education starting at age 7, irrespective of whether or not a child is institutionalized.

The main results of this paper can be summarized as follows: We find that the permanently institutionalized, i.e., orphans and social orphans, are significantly disadvantaged in school enrollment when compared to non-institutionalized children. Conversely, children who are institutionalized but have family contact seem more likely to be enrolled in school than non-institutionalized children. However, some endogeneity problems and selection bias may contaminate the above results: it may be the case that the family decision to institutionalize, e.g., a disabled child (and then keep in contact) is

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<sup>4</sup> Concerning the latter group, we uncover that despite a large decline in live births after 1990, the abandonment rate is increasing.

not exogenous to education.<sup>5</sup> In the absence of a clean instrument, we try to minimize our potential bias by excluding from our estimation children who entered the current institution directly from their families.

We find that the effect on school enrollment depends on the health status of a child as follows:

(i) Healthy, permanently institutionalized children are less likely to be enrolled in school than non-institutionalized healthy children, while we find no significant effect on school enrollment between the institutionalized with a family relation and the non-institutionalized.

(ii) Among children with a medical problem, we do not find a significant difference in school enrollment between the permanently institutionalized and the non-institutionalized, probably because both groups are at high risk of being poorly educated. At the same time, institutionalized children with family contact have a higher probability of being enrolled in school than non-institutionalized children.

This paper also relates to the literature that measures the effects of foster care on child outcome. While some studies show that children placed in foster care more frequently become homeless, drug addicts, and/or unemployed and are more likely to rely on public assistance and feel isolated from their peers, but less likely to marry,<sup>6</sup> there is very little evidence on the effects of institutionalization. Nelson et al. (2007) look at the Romanian institutionalized children and find that orphan children or children abandoned at birth were performing the same in terms of language skills at 30 months of age as at 18 months of age.<sup>7</sup>

This paper is organized as follows. Section 2 presents the background to the Romanian abortion ban under the Communism regime and describes the child welfare system

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<sup>5</sup> An overwhelming 80 percent of abandonments occurred already at the maternity wards and hospitals, so it is fair to assume that abandonment is exogenous to school enrollment (UNICEF, 1997).

<sup>6</sup> See Doyle J., 2007a, b; Maclean K., 2003 for a review in psychology; Collins M., 2001 for a review in social work.

<sup>7</sup> Another strand of research in psychology addresses the problem of children development post-institutionalization. There are two important projects that look at Romanian previously institutionalized children and their development after being adopted in Canada and the UK. At the time of adoption, children were delayed in all areas of development. By 11 months post-adoption, children had improved their development, although the length of time the children had spent in institutions before being adopted was positively associated with the number of areas of delay (see Morison and Ellwood, 2000; Kim Maclean, 2003).

immediately before and after the Revolution. Section 3 provides a brief discussion on channels that may influence school enrollment and Section 4 describes the data. Section 5 illustrates our main empirical strategy and the results, and Section 6 concludes the paper.

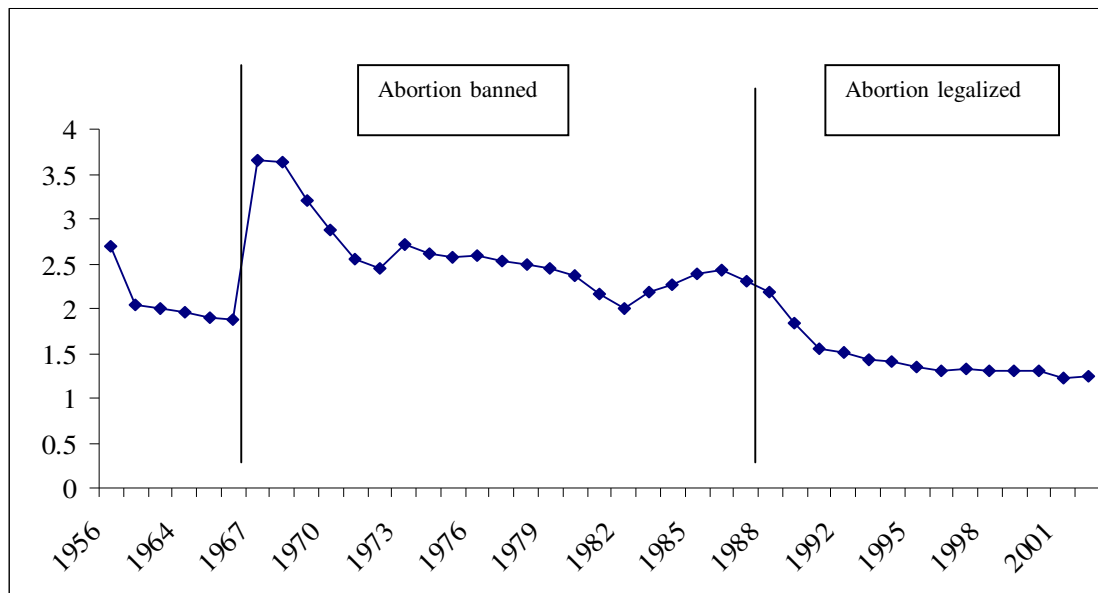
## 2. Background

To provide a context for the results, the next two subsections briefly describe Romania's unique history of no access to abortion or contraceptives during the Ceausescu regime, and the child welfare system before and immediately after the fall of Communism.

### 2.1 Abortion ban and child institutionalization during Ceausescu

Before 1966, Romania had one of the most liberal policies in Europe, abortions being provided at no cost in state medical institutions.<sup>8</sup> In 1966, the Communist regime issued a decree stating that abortion and family planning were illegal. More exactly, legal abortions were still available up to 24 weeks for women older than 45 who already had more than four children and for women who had become pregnant from rape or incest. The immediate impact was a dramatic increase in the fertility rate (from 1.9 to 3.7 children) in only one year (see Fig.1).

**Fig. 1:** Total fertility rate, 1956-2002

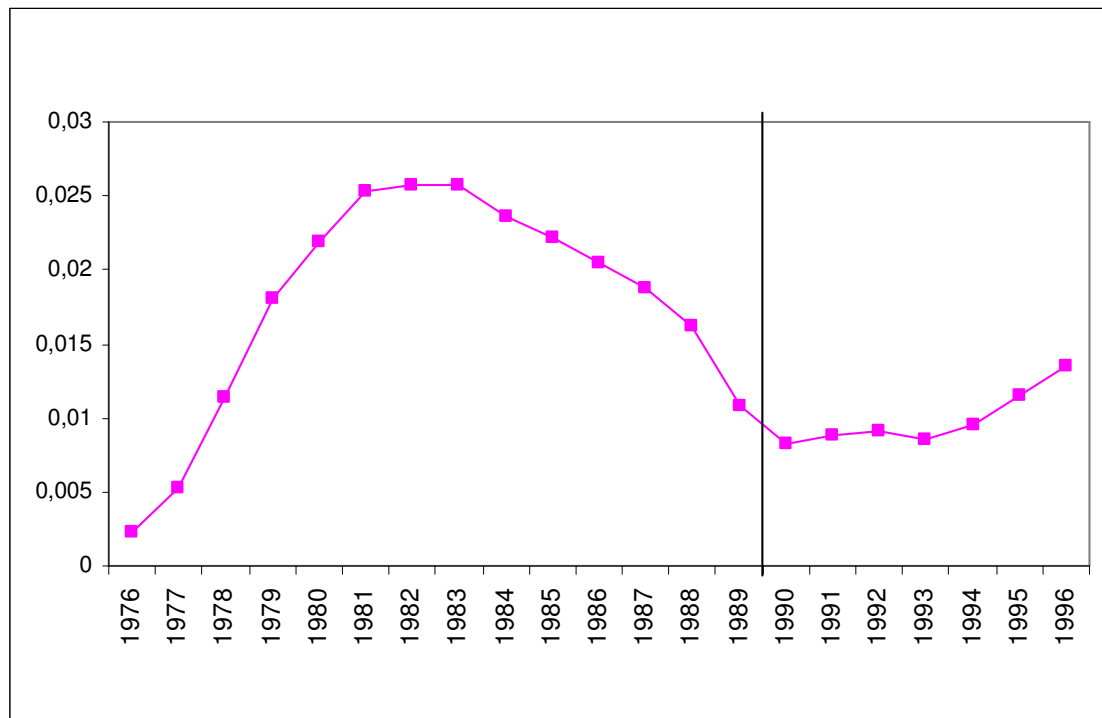


Source: UN (2002).

<sup>8</sup> In 1965, there were cca. 408 abortions per 100 live births (see Berelson, 1979).

The sharp increase was followed by a steady decrease until 1985.<sup>9</sup> This decline was mainly the result of a massive increase in illegal abortions (Kligman, 1998). One of the most dreadful outcomes of the abortion ban was the high number of abandoned and institutionalized children. “*The State wanted them, the State should raise them*” became a cynical but accepted norm in Communist Romania, claimed by families when leaving their children in maternity wards, hospitals, or institutions. Abortion remained illegal until December 1989, when Ceausescu and his regime were removed from power. Following the liberalization of abortion and family planning, the effect was instantaneous, with a decline in fertility and an increase in abortions. Fertility began to stabilize in 1992, but at a lower level. In 1990, Romania reached the highest number of induced abortions in the world: 200 per 1,000 women aged 15-44, a number seven times higher than in the US (Serbanescu et al., 1995).<sup>10</sup>

**Fig. 2:** Institutionalized children in 1997 relative to the total number of children, by birth cohort



Source: Census of the institutionalized children, 1997. INSE (Statistics Romania), Romania.

<sup>9</sup> In 1985, Ceausescu reinforced the 1966 law by raising the number of required children per woman to 5 and compelled women and teenagers to monthly gynecological exams at workplaces/schools to ensure that they were not pregnant (see Greenwell, 2003).

<sup>10</sup> In 1990, there were more than 1 million induced abortions in a country of 23 million people.

After 1990, when abortion and family planning became legal, both institutionalization and abandonment were expected to drop immediately and significantly. Fig.2 plots the child institutionalization rate, i.e., institutionalized children (observed in 1997) relative to total live births in Romania, by birth cohort. We observe a drop that started in 1984 and continued until 1990. After 1991, the child institutionalization rates started to increase despite the previously mentioned large decline in live births.

## 2.2 Child welfare system during Communism

During Communism, child institutionalization was regulated by Law No. 3/1970: “The protection of certain groups of minors” (this law was totally abolished in June 1997).<sup>11</sup> Children in Romania were not removed from their families to protect them from abusive or neglecting parents; instead the parents were choosing to institutionalize their children.<sup>12</sup> Both before and after 1989, it was common for parents to claim a lack of proper living conditions at home or some social or economic problems in order to leave their children to institutions (Kligman, 1998).<sup>13</sup> Most of these children were abandoned in maternity wards or hospitals.<sup>14</sup> The concept of *abandonment* was totally missing from this law; these children “were not considered to be in difficulty, but rather that their needs were being fully met within a collective guaranteed by the state” (UNICEF, 2005).

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<sup>11</sup> This law was modified in 1990, legalizing foreign adoption. The definition of an *abandoned* child under the new law was vague, which often made the process of international adoption difficult. This gave rise to informal/illegal adoption and child trafficking. This law was subsequently banned in 1991, and further rules were added, some to the detriment of children, e.g., in order to be adopted, the child should be *legally* abandoned, i.e., he or she should reside in the institution for at least 6 months, and be declared a legal orphan (parents deceased/agree with the adoption/parental deprived of their parents’ rights). The many children with parents but no contacts with them were not eligible for adoption. Thus, many children were trapped in the system.

<sup>12</sup> When institutionalization was the result of a recommendation of a commission, the children were usually born with severe medical problems. In some extreme cases, institutionalization came as an “emergency decision” recommended by authorities, when e.g. a child was removed from home due to neglect or when parents were not able to care for their children.

<sup>13</sup> Especially in the 1980s, the centralized distribution affected the families’ ability to cover their basic needs like eating, heating the apartments, and light. After 1990, the economic situation was still critical (high inflation during the restructuring process pushed many working families into long-term unemployment or out of the labor force). Thus, institutionalization was often a solution for families with difficult circumstances.

<sup>14</sup> The abandonment rate for children age 0-3 almost doubled from 1989 to 1996 (Greenwell, 2001). More than 85 percent of the 0-3 year old children who came to an institution in 1990 came directly from a maternity ward or hospital. The number was 80 percent in 1996.



While in many countries the average time spent in state welfare care (e.g. foster care) is about two years (see Doyle J., 2007a), in Romania, once a child entered the system, it was uncommon to exit before age 18, when children were required to leave the institution. Attempts to reintegrate the children with their parents were almost never made, and an official mechanism for placement of children in foster families was almost non-existent until 1997. Hence, children were usually kept isolated in institutions.

*Transition inside the institutional system:* Orphans and abandoned 0-3 year old children lived in the so-called *leagane* (nurseries) where they were offered food and shelter; they were assigned to the Ministry of Health, under the assumption that children under the age of 3 need no form of care, attention, or education. After the age of 3, children were transferred to *case de copii* (children's home) or to *gradinite* (kindergarten). Children with "incurable" deficiencies such as mental problems, dystrophies, blindness, or deafness were sent to *camine spital*, which was assigned to the Secretary of State for the Handicapped. Since children in the latter category were assumed to have no potential of becoming "productive citizens" they were often the most neglected (Greenwell, 2003; Kligman, 1998). The situation of the children somehow resembled that of Nazi Germany, where children who did not meet the social or biological criteria of "perfect" children were removed from their homes and isolated in institutions, hospitals, or concentration camps (Rogow, 1999). At age 7, children entered general education (grades 1 to 8). Children could attend normal schools, they could be educated within the same institution where they were hosted or within the so-called "special-schools" (for children with different disabilities).

It is important to stress upfront that for children with different deficiencies who needed special care, especially in the form of education, the "special schools" were often a way of getting educated, regardless of whether they were in permanent institutional care or were living with their families, i.e., not institutionalized. We will come back to this.

### **3. School enrollment and institutionalization – some preliminary discussions**

The main goal of this paper is to examine whether the institutionalized children are at a high risk of not being enrolled in school when compared to their non-institutionalized peers. By law, all children ages 7-15 were required to be enrolled in school. The

compulsory general education (8 grades) consisted of primary elementary school (grades 1 to 4) and gymnasium school (grades 5 to 8).<sup>15</sup> No difference was made in this regard between institutionalized and non-institutionalized children. In addition, any child could attend a normal school or “special schools” for people with different disabilities. If institutionalized, the children could also be educated within their institution.

School enrollment may be linked to several ideas/channels. One channel that may affect school enrollment, irrespective of institutionalization, is a child’s health status. Models of human capital investment predict that parents will expect schooling to make an important addition to the lifetime productivity of a healthy child, in contrast to an unhealthy one. So, health status may affect whether or not a child is enrolled in school. Moreover, the presence of a severe medical problem (e.g., HIV/AIDS or severe disabilities) may increase the mortality risk in adulthood, which in turn, *ceteris paribus*, may reduce the expected return to schooling (Fortson, 2007). To the extent that human capital investment responds to changes in the expected return to schooling, one may assume a decrease in human capital investment among the HIV/AIDS or children with severe malformations and disabilities. Of course, it may be that both child health and school enrollment reflect the household’s decision in child investment, so there might be some causal problems (see Alderman et al., 2001).

Some families may have institutionalized their children, not in the form of abandonment but temporarily, as an “investment” in the child’s human and/or health capital. This could have been the case when, e.g., a child had some disabilities/medical problems that needed a special form of education that was provided in institutions (special schools or sometimes in the institutions where the child was hosted).<sup>16</sup>

Moreover, when parents faced, e.g., borrowing constraints and/or certain school-related fees (uniforms/clothes, books, transportation), they could (temporarily) institutionalize

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<sup>15</sup> After graduating from the eight compulsory grades, children could continue into high school (4 years) or enter vocational schools and apprenticeship programs. Preschool education was offered (at least theoretically) in kindergartens to 3-6 year old children.

<sup>16</sup> These are basically the children who returned home every day/week/kept family contact. The alternative could be that even though the child had certain disabilities/medical problems, the family could have decided to keep him/her at home, providing no education.

their child, regardless of the child's health, as a strategic decision since an institutionalized child could benefit from free meals, clothes, and care (DPDI, 2005).<sup>17</sup> If the child was in permanent institutional care, implying no family contact (i.e., orphans, children abandoned by their living parents), then institutions assumed full responsibility for the child's health, safety, and education.<sup>18</sup> As previously mentioned, the educational law required compulsory school starting at age 7. Irrespective of the basis upon a child entered the state child welfare system he/she should receive adequate education according to their needs. One may therefore expect a 7 year old child in full state care to be enrolled in school.<sup>19</sup> It is important to note that, according to different sources, abandonments were recorded in overwhelming numbers already in maternity wards and hospitals (UNICEF, 1997), so it is fair to assume that the abandonment decision is exogenous to school enrollment.

A priori, it is difficult to draw clear conjectures on the school enrollment of an institutionalized versus a non-institutionalized child. In the empirical analysis we try to shed some light on and investigate whether an institutionalized child is at higher risk than a non-institutionalized child of not being enrolled in school. We also try to understand whether there are significant differences in school enrollment among the institutionalized children, once we control for institution fixed effects.

#### **4. Data and Measurement**

In carrying out our empirical exercise we use two data sources. The primary source is a unique census of *all* institutionalized Romanian children in 1997. In addition, we use the 1995 Romanian Integrated Household Survey (RIHS), which is the first nationally

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<sup>17</sup> Also, parents faced with borrowing constraints or economic, health-related or social problems could delay enrolling their children in school (see Glewwe and Jacoby, 1995).

<sup>18</sup> For orphans there is no parental decision as there is for social orphans. Contrary to the related literature on developing countries, the extended family and the community were rarely considered an alternative option to abandonment in Romania.

<sup>19</sup> Of course, a child raised in institutions with no family contact is more likely to develop deficiencies or other medical problems including lags in psychological and intellectual functioning, which is likely to negatively affect his/her educational abilities (see Nelson et al., 2007). Anyway, we are not interested in assessing anything related to how well these children perform in school, e.g., their grades; we only consider school enrollment.

representative Romanian survey, to extract information on the non-institutionalized children.

#### **4.1 The institutionalized children**

The specially designed 1997 census on institutionalized children is a unique data providing information on these children. Almost 103,000 children were institutionalized in 653 state institutions spread across the country, accounting for almost 2 percent of all 0-18 year old children. This number includes orphans, abandoned children, children found on the streets, juvenile delinquents, and also children with or without disabilities left temporarily in the institutions by their living parents.<sup>20</sup>

The backgrounds of these children were usually poorly documented, with a limited set of information about their biological families.<sup>21</sup> Our census nevertheless provides some useful information: the exact time of birth (day, month, and year), gender, the health status of the child, whether orphan, whether the child comes from a single-parent household, whether the child has family contact (e.g., receives gifts or money and/or visits or receives visits from the family at least twice a year).

Important for our purpose is that we also have information on school enrollment. Although this is the only available school-related information, it is a good proxy of human capital investment. We need to stress that we do not know what grade the child was enrolled in, but only whether he or she was enrolled in school.

A drawback of our data is that it does not reveal the age when a child entered the institutional system for the first time, but only the age when the child entered the present institution and whether he/she moved from another institution or entered directly from his/her family.

Overall, only 2 percent of all institutionalized children in 1997 were *orphans*, defined here as children with both parents deceased, and 14 percent were from single-parent households (defined as single-parent orphans or out-of-wedlock births/unknown father).

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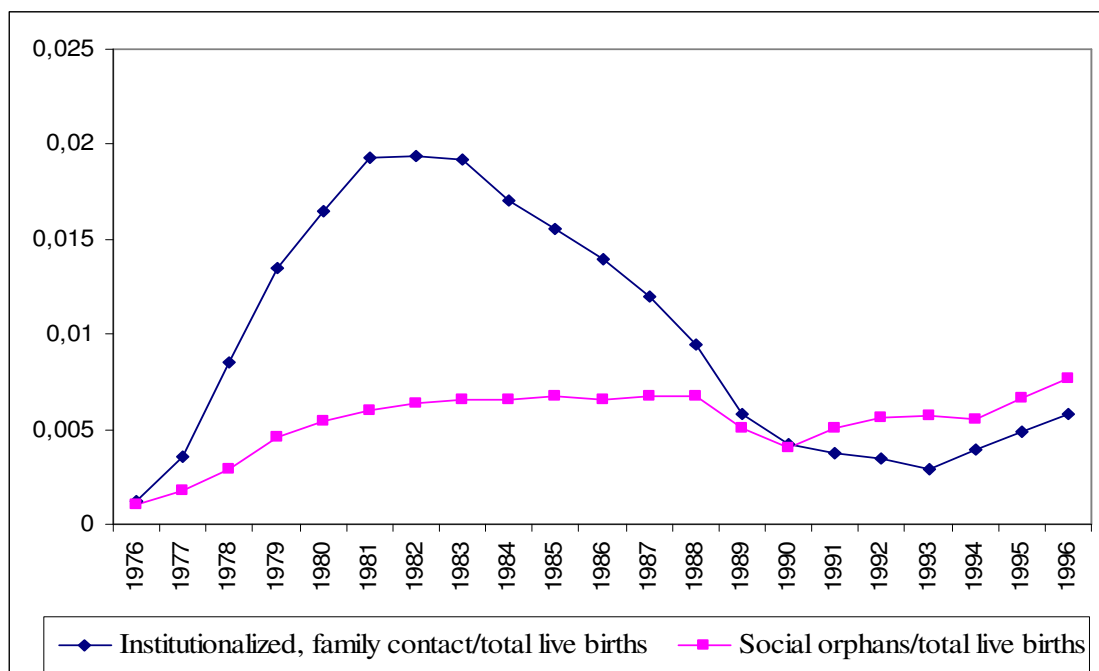
<sup>20</sup> This number does not include street children (roughly 3,000 children) and children abandoned in medical facilities that will most probably end up in institutions (3,262 children).

<sup>21</sup> The limited available information was often lost/truncated when children were moved from one institution to another (Greenwell, 2003).

In our empirical exercise we consider two main categories: (1) *Children in permanent institutional care*: orphans (as defined above) and social orphans. The social orphans accounted for almost 35 percent of all institutionalized children in 1997. These are children who had living parents but who had *no* contact with them; they were declared abandoned, had no ID, and had the institution as a permanent address. (2) *Institutionalized children who stayed in contact with their families*, some still had the institution as a permanent address. These are children that needed special forms of attention (i.e., children with disabilities), but also healthy children institutionalized by their families invoking poor economic condition at home or some social motive.

Before going on, note that in Fig.3, by plotting social orphans relative to total live births in Romania, by birth cohort, we uncover that children were abandoned in state institutions even after 1990. The proportion of social orphans by birth cohort in the total number of live births did not decrease as expected after 1990; we notice a slight increase starting in 1991.<sup>22</sup>

**Fig. 3:** Institutionalized children in 1997 relative to the total no. of live births, by year of birth



Source: Census of the institutionalized children, 1997. Romanian Census, 2002. INSE, Romania.

<sup>22</sup> This coincides with a difficult transition period in Romania, high inflation, and high unemployment rates. See the World Bank (2003) for the economic situation in Romania after 1990. Unfortunately, we do not know the exact day of initial institutionalization, but only the entry date of the current institution. Anyhow, if the child was born after 1990, he/she must have been born when abortion and contraceptives were legal.

We focus next on the sample consisting of institutionalized children at schooling age 7-15. Note first that in what follows we do not include juvenile delinquents, children in the re-education schools, or children institutionalized because of “other” motive.<sup>23</sup> Table 1, Column 1 (for the permanently institutionalized) and Column 2 (for the institutionalized children with family contact) present the summary statistics of our selected sample of institutionalized children ages 7-15. Overall, we have 58,212 institutionalized children, among which 18,562 (or 32 percent) are permanently institutionalized and 39,650 (or 68 percent) are institutionalized but keep family contact. We observe significant differences between the two different categories: The institutionalized orphans or social orphans were more likely to be girls and children from single-parent households, while children with family contact were more likely to have medical problems. Also, there are significant differences in enrollment rates: the permanently institutionalized were less likely to be enrolled in school.

Next, we need to make two important remarks on the health status variable. First, according to INSE Romania, this is the current health condition, which, in most cases, coincides with the institutionalization motive (so health at the time the child first entered the institutional system) while, in some cases was based on a current evaluation. Many sources confirm that a majority of children suffered from a physical or mental disability at the time they were first institutionalized (see Groza et al., 1999; UNICEF 1997, 2005).<sup>24</sup> However, while some children were healthy or had only minor disabilities at the time they were first brought to the institutions, it is likely that their health status got worse while institutionalized; see, e.g., Romanian HIV cases (Greenwell, 2003; UNICEF 2001, 2005).<sup>25</sup> Children institutionalized before age 3 were especially vulnerable, as the first years of life are absolutely crucial for a child’s normal development (Groza et al., 1999). Since it was usually the case that child abandonment occurred in maternity wards

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<sup>23</sup> “Other” motive may include children found on the streets, and some emergency placements.

<sup>24</sup> During Communism, medical personnel sometimes advised parents to leave their children born with disabilities in the institutions, claiming that the parents otherwise would be ostracized for raising a disabled child. On the other hand, we should remember that institutions were also playing the role of child care service providers for children with disabilities brought in by their families to receive a form of education.

<sup>25</sup> We observe that 0.05 percent of the children were HIV/AIDS positive and/or had severe deformations and malformations. In 1995, more than 50 percent of all reported European AIDS cases were found in Romania, mainly because of the conditions in institutions (Zamfir, 1997). The HIV cases in institutions increased mainly due to the practice of blood transfusions with infected needles. Since most of the children were malnourished, the transfusions were initially meant to help strengthen their immune systems.

and pediatric hospitals, it is expected that children's health deteriorated while in the system. The second remark is related to our definition of health status or medical problems which include: HIV/AIDS, severe malformations, dystrophy, mental deficiency/disability, physical disability, sensorial disability, and multiple disabilities.

**Table 1:** Descriptive statistics of the main variables

	Permanently institutionalized (treatment group)	Institutionalized, family contact (treatment group)	Non-institutionalized (control group)	Whole working sample
<i>Female</i>	0.44 (0.49)	0.41 (0.49)	0.49 (0.49)	0.43 (0.49)
Difference	Noninstitutionalized-Institutionalized:		0.007*** (0.005)	
	Noninstitutionalized-Permanently institutionalized:		0.048*** (0.006)	
	Noninstitutionalized-Family contact:		0.081*** (0.005)	
<i>Age</i>	11.14 (2.39)	11.83 (2.30)	11.10 (2.64)	11.51 (2.41)
Difference	Noninstitutionalized-Institutionalized:		-0.512*** (0.023)	
	Noninstitutionalized-Permanently institutionalized:		-0.044 (0.028)	
	Noninstitutionalized-Family contact:		-0.730*** (0.024)	
<i>Medical problem</i> *	0.53 (0.49)	0.68 (0.45)	0.01 (0.10)	0.53 (0.49)
Difference	Noninstitutionalized-Institutionalized:		-0.635*** (0.004)	
	Noninstitutionalized-Permanently institutionalized:		-0.523*** (0.004)	
	Noninstitutionalized-Family contact:		-0.687*** (0.004)	
<i>Single parent</i> **	0.19 (0.39)	0.11 (0.32)	0.07 (0.25)	0.13 (0.33)
Difference	Noninstitutionalized-Institutionalized:		-0.007*** (0.003)	
	Noninstitutionalized-Permanently institutionalized:		-0.128*** (0.004)	
	Noninstitutionalized-Family contact:		-0.048*** (0.003)	
<i>School enrollment</i>	0.79 (0.40)	0.96 (0.17)	0.92 (0.26)	0.91 (0.27)
Difference	Noninstitutionalized-Institutionalized:		0.012*** (0.002)	
	Noninstitutionalized-Permanently institutionalized:		0.119 *** (0.004)	
	Noninstitutionalized-Family contact:		-0.042*** (0.002)	
Observations	18,562	39,650	13,197	71,409

Note: Standard deviation in parentheses. We only consider children ages 7 to 15.

Source: Our own calculations from the 1995 RIHS and the 1997 Census of the institutionalized children. INSE, Romania.

## 4.2 The non-institutionalized children

We augment the above sample with information on non-institutionalized children by using the Romanian Integrated Household Survey (RIHS). RIHS is the first large-scale nationally representative survey, and it collects detailed information on income, housing conditions, education, and some other socio-economic measures for about 32,000 households.

For our exercise, we only consider children ages 7-15. Thus, some child characteristics of a selected sample of 13,197 observations are summarized in Table 1, Column 3. As can be seen, the average net school enrollment is about 92%.<sup>26</sup> Besides school enrollment, an important piece of information in the RIHS survey is the detailed information on health status. Among the school-age children, 0.01 percent had a disability which is defined here as: limb amputation, physical deformations, deafness, mental retardation, mental disorder, etc. It may also include severe anemia, iron deficiency, etc.<sup>27</sup>

Before going on, Table 2 presents the association between child health and household economic status. Child disability is usually seen as both a determinant of poverty, as it lowers household income and standard of living (Jones and O'Donnell, 1995), and a consequence of it, since poverty can cause serious health problems especially to infants and children. Especially in developing countries, households with a disabled person are significantly more likely to be poor, and children with disabilities are less likely to start and attain school (Filmer, 2005). Perhaps surprisingly, we do not observe a pattern in the prevalence of children with disabilities across household income deciles. However, it seems that school enrollment does increase with the economic status of the household.

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<sup>26</sup> At the national level, the net enrollment rates for non-institutionalized children in the 1994-1995 and 1996-1997 academic years are very similar, i.e., about 90 percent for 7-15 year olds.

Note: Net enrollment rate is defined as the number of children ages 7-15 enrolled in school divided by the total number of children ages 7-15.

<sup>27</sup> To make it comparable to the definition of medical problems available for children in institutions, we do not include as medical problems diseases (during the reference month) such as: stomach disease, flu, and so on, that might affect e.g., school attainment but not school enrolment.



**Table 2:** The prevalence of disability among children ages 7-15 by household income deciles

Income Deciles	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Disability	9.68	11.83	12.90	8.60	15.05	11.83	11.83	5.38	4.30	8.60
School enrollment	0.73	0.77	0.81	0.82	0.85	0.86	0.87	0.88	0.88	0.90

Source: Our own calculations from the 1995 RIHS. INSE, Romania.

### 4.3 Our working sample

Finally, our whole working sample consists of 71,409 children ages 7-15, and includes both institutionalized (permanently institutionalized and institutionalized with family contact) and non-institutionalized children. Table 1, Column 4 presents the summary statistics of our working sample. We observe statistically significant differences between non-institutionalized and institutionalized children. More exactly, non-institutionalized children were slightly more likely than institutionalized ones to be enrolled in school, considerably less likely to have a medical problem, and also less likely to come from a single-parent household. Moreover, we find significant differences between specific groups within institutions and non-institutionalized children. Permanently institutionalized children (orphans and social orphans) were significantly less likely to be enrolled in school and more likely to have a medical problem than non-institutionalized children. Also, females were significantly less likely to be institutionalized, both permanently and with family contact.

### 5. Empirical strategy and results

Our main aim with this empirical exercise is to analyze whether the institutionalized children are at a high risk of not being enrolled in school when compared to their non-institutionalized peers. More precise, we attempt to understand whether abandoned and orphan children (permanently institutionalized children) have a significantly different likelihood of being enrolled in school compared to non-institutionalized children.

We assume that the decision whether to abandon or to maintain contact with the child was made at the time when the child first entered the institution. It is also fair to assume that child abandonment is exogenous to school enrollment.<sup>28</sup>

We proceed in the following way: First we try to find out whether an institutionalized child is more likely to be enrolled in school than non-institutionalized peers. The basic estimating equation for the  $i$ th child is as follows:

$$S_i = \alpha_0 + \alpha_1 instit_i + \alpha_2 female_i + \sum_{k=8}^{15} \beta_k I(age_i = k) + \alpha_3 health_i + \sum_{j=1}^{41} \gamma_j I(county_i = j) + \varepsilon_i \quad (1)$$

where  $S_i$  is a dummy equal to 1 if child  $i$  is currently enrolled in school and 0 otherwise, irrespective of the grade in which he or she is enrolled;  $instit$  is a dummy that takes the value 1 when child  $i$  is institutionalized; we control for gender, health and for a set of age indicators (age 7 is the reference group). Finally, we include county-specific indicators. Eq. (1) was estimated using a linear probability regression.<sup>29</sup>

The parameter of interest here is the coefficient on the institution indicator,  $\alpha_1$ . Moreover, of interest to us is whether the institutionalized children in the permanent care of the system (orphans and social orphans) are better off in terms of school enrollment than the non-institutionalized children. Our preferred specification to (1) incorporates two specific dummies as an alternative to the  $instit$  dummy: the first takes the value 1 if the *institutionalized* child is in *permanent* care of the system, and the second takes the value 1 if the *institutionalized* child *has family contact*.

One concern in the latter specification is the assumed exogeneity of the *institutionalized children with family contact*. It may be that a family decides to institutionalize (while keeping in contact) their child just so he/she could get education, regardless of the child's health.<sup>30</sup> We try to address this issue.

Note also that generally when e.g. estimating the effect of state care/foster care on children outcomes there might be some endogeneity and selection bias in the sense that

<sup>28</sup> This is not a strong assumption given that, e.g., more than 85 percent of children age 3 or younger in 1990, and 70 percent of the same age range in 1996, came directly from maternity wards and hospitals (UNICEF 1991, 1996).

<sup>29</sup> Results here and for the models reported below are very similar when probit or logit models are used.

<sup>30</sup> It is important to stress again that in most cases, it was the family that decided whether to institutionalize the child or not. This is different from Western countries, where institutionalization is a result of a recommendation by a special investigator.

worse outcomes for institutionalized/foster care children if compared to other children could be due to some abusive family background, and not necessarily to the effect of institution/foster care placement (see Doyle, 2007a, b). In our estimations the above concern is not warranted since we are not interested in long-term outcomes of the institutionalized children compared to their non-institutionalized peers (therefore not being able to disentangle the effect of institution vs. family background), or on how well they are performing in school.

Another drawback of the above analysis might be that school enrollment may be related to the quality of the institution (for the institutionalized children).<sup>31</sup> We would therefore like to be able to use institution fixed effects. At the same time, at the household level, there might be some unobserved factors that influence both children's education and health.

We can push our comparisons further in the following way: We *only* consider the institutionalized children and we employ institution fixed effects to ask whether permanently institutionalized children (orphans and social orphans) are more likely to be enrolled in school than institutionalized children with family contact. If school enrollment is related to the "quality" of the institution, using institution fixed effects we account thus for unobserved differences across regions and, more important, for unobserved factors that might affect both child health and school enrollment. For example, unobserved institution characteristics such as neglect or lack of proper care may be negatively correlated with both investment in child education and child health, resulting in an overestimate of the effect of health on education enrollment in an OLS regression.

Finally, the last part of our empirical analysis will look at some sensitivity analyses and address one additional question. Since non-institutionalized children from single-parent households (as defined above) are at high risk of not being enrolled in school, we ask: Are institutionalized children from single-parent households at a greater or lesser disadvantage in terms of school enrollment than non-institutionalized children in single-parent households?

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<sup>31</sup> See also the discussion in Section 2.2.

## 5.1 Main estimates

We begin in Table 3, Column 1 by estimating (1). A female seems less likely than a male to be enrolled in school, but the effect is very small.<sup>32</sup> We also include age specific dummies (children age 7 as the reference group). We observe that education enrollment tends to increase with age. However, given that for the institutionalized children we only have information on school enrollment, and not on the grade the child is enrolled in, we can not infer more on this issue.<sup>33</sup> This effect is robust across the following specifications.

As expected, children with medical problems are significantly less likely to be enrolled in school. Finally, we find a negative and significant effect on school enrollment of the institutionalized compared to their non-institutionalized same-age peers. The effect is rather small, probably because different groups within institutions have different (and counteracting) effects.

Column 2 shows separately the two main groups of institutionalized children (the reference group is non-institutionalized children): a dummy indicating whether the institutionalized child is an orphan or a social orphan (i.e., permanently institutionalized) and a dummy indicating whether the child is institutionalized but has family contact. We find that the probability of being enrolled in school is 11 percentage points lower for permanently institutionalized than for non-institutionalized children. Also, the probability of being enrolled is 4.7 percentage points higher if the child is institutionalized but keeps family contact than if he/she is non-institutionalized.

Thus, everything else equal, children in permanent institutional care are less likely to be enrolled in school than non-institutionalized ones. On the other hand, if children are institutionalized but keep family contact, they do better than non-institutionalized peers in terms of school enrollment. One way of interpreting this could be that for the latter group

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<sup>32</sup> One way of interpreting this result is that parents, especially in poorer traditional societies, usually prefer sons to daughters. More exactly, there is a higher preference for investing in sons than daughters since sons may turn out to be profitable in the future. The effect is however too small to make such inferences.

<sup>33</sup> One explanation could be a tendency of delaying school enrolment. As a sensitivity analysis we excluded the institutionalized children who entered the institution during the present school year. The results remain similar.

**Table 3: School enrollment children ages 7-15, both institutionalized and non-institutionalized**

	[1]	[2]	[3]	[4]	[5]
Female	-0.007*** (0.002)	-0.004** (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.005* (0.004)
Age8	0.215*** (0.010)	0.218*** (0.009)	0.216*** (0.009)	0.217*** (0.009)	0.211*** (0.011)
Age9 <i>equiv of elementary school</i>	0.305*** (0.009)	0.306*** (0.009)	0.299*** (0.009)	0.295*** (0.009)	0.292*** (0.011)
Age10	0.339*** (0.008)	0.328*** (0.008)	0.370*** (0.009)	0.310*** (0.009)	0.313*** (0.010)
Age11	0.353*** (0.008)	0.345*** (0.008)	0.336*** (0.008)	0.325*** (0.008)	0.345*** (0.010)
Age12 <i>equiv of gymnasium school</i>	0.360*** (0.009)	0.348*** (0.008)	0.342*** (0.008)	0.327*** (0.008)	0.350*** (0.010)
Age13	0.363*** (0.009)	0.348*** (0.008)	0.343*** (0.008)	0.326*** (0.008)	0.346*** (0.010)
Age14	0.360*** (0.009)	0.344*** (0.008)	0.338*** (0.008)	0.320*** (0.008)	0.333*** (0.010)
Age15	0.350*** (0.009)	0.331*** (0.008)	0.328*** (0.008)	0.307*** (0.008)	0.306*** (0.011)
Medical problem	-0.052*** (0.002)	-0.066*** (0.002)	-0.246*** (0.038)		-0.248*** (0.038)
HIV/severe malformation				-0.601*** (0.039)	
Deficiency				-0.244*** (0.038)	
Institutionalized	-0.021*** (0.003)				
Permanently institutionalized		-0.113*** (0.004)	-0.073*** (0.004)	-0.072*** (0.004)	-0.087*** (0.027)
Family contact, institutionalized		0.047*** (0.003)	0.014*** (0.003)	0.015*** (0.003)	-0.004 (0.005)
Medical*Perm institutionalized			0.102*** (0.038)	0.159*** (0.038)	0.142*** (0.039)
Medical*Family contact			0.226*** (0.038)	0.246*** (0.038)	0.223*** (0.039)
County dummy	YES	YES	YES	YES	YES
Observations	71,409	71,409	71,409	71,409	33,115
R <sup>2</sup>	0.12	0.17	0.18	0.23	0.15

(institutionalized with family contact), institutionalization came as an investment in these children's human and/or health capital.

More exactly, it may be that, e.g., if a child has some sort of disability or medical problem, and the family decides to send him/her to school, then the child may be enrolled in a "special school" or other type of school within an institution. If true, this may cast doubt on the assumed exogeneity of the family relation variable in the school enrollment model.

In Column 3 we try to understand more on this issue and we include two interaction terms: (1) the medical problem and being permanently institutionalized, and (2) the medical problem and being institutionalized with family contact.

Among healthy children, a permanently institutionalized child has a .07 lower chance of being enrolled in school than a non-institutionalized, while an institutionalized child with family contact has a .01 higher likelihood of being enrolled in school than a non-institutionalized one. Although significant, the latter effect is rather small now compared to the corresponding one in Column 2.

A child with some medical problems in permanent institutional care has a .029 higher chance of being enrolled in school than a non-institutionalized child. However, this marginal effect is not significant at any conventional level. On the other hand, for an institutionalized child with medical problems who keeps family contact, we find a significant and large effect; more exactly, we find a .241 higher chance of being enrolled in school compared to a non-institutionalized peer. This effect is significant at the 1 percent level.

Interestingly, once we control for the interaction terms in Column 3, we observe that the non-institutionalized children with a medical problems are much less likely to be enrolled in school (negative .246 compared to negative .066 in Column 2).

Overall, it seems that being institutionalized and keeping family contact to a large extent is due to having a medical problem.<sup>34</sup>

In Column 4 we analyze whether the medical problem severity matters; although we acknowledge that this may be quite ad-hoc, we consider *HIV positive and children with*

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<sup>34</sup> In a different specification we have excluded children that were institutionalized after September, the school enrolment cutoff. The results are similar.

*severe disability/malformation*, on the one hand, and *deficiency* (which includes mental deficiency, partial deafness or, anemia, iron deficiency, etc.), on the other. We find that HIV positive children and children with severe disability/malformation are significantly less likely to be enrolled in school. One way of interpreting this is that, since the presence of a severe health problem may increase the mortality risk in adulthood, it could, *ceteris paribus*, reduce the expected return on schooling. Also, children who suffer from a deficiency (as defined above) are less likely to be enrolled in school, but the effect is much lower.

As mentioned before, one concern in the estimates above is the likely endogeneity of institutionalized children who keep family contact. A decision of a family to institutionalize a child (not in the form of abandonment) is very likely not to be exogenous with respect to school enrollment, in the sense that some children are brought to an institution precisely to get educated. Prior to 2000, even though legal, it was uncommon for a child with a medical problem to be enrolled in a normal school (see DPDI, 2005), so many of these children may become institutionalized by the time they start school.<sup>35</sup>

We deal with this concern by making use of the following information: We know whether the child came to the present institution directly from the family (i.e., family transit), or from another institution (i.e., institutional transit).<sup>36</sup> In the following specification, among institutionalized children we only consider *children who transitioned from another institution* (both permanently institutionalized and those with family contact). Why? If a family institutionalized a child before the child should be enrolled in school, this may be considered exogenous to education.<sup>37</sup> In Column 5 we use

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<sup>35</sup> One concern could be a possible selection in the sense that the worse-off children in terms of health are actually in institutions and keep in contact with their families. Note that, within this group, 69 percent have a medical problem, but there are also healthy children brought in by their parents claiming a poor economic situation (18 percent) or some other social matter (13 percent).

<sup>36</sup> Family transit and institutionalized with family contact are rather highly positively correlated (0.55).

<sup>37</sup> Of course, institutionalization at early ages may still be seen as an investment. According to different sources, some families were sending children to institutions claiming poor economic conditions and social matters, hoping the children would be given free food, (health) care, and clothes (see, e.g., UNICEF, DPDI, 2005). Also, even a child with disabilities could have been institutionalized while keeping in contact, e.g., by sending him or her to some a kindergartens for children with special needs.

the same control as in Column 3 on the sample where we exclude children who came to the current institution directly from their families.

When the child has no medical problem, the permanently institutionalized are still less likely than the non-institutionalized children to be enrolled in school, but the healthy children who are institutionalized and keep in contact with parents are not significantly different in school enrollment than the non-institutionalized.

The effect of being permanently institutionalized (rather than non-institutionalized) on school enrollment among children with medical problems is slightly lower than in Column 3, (i.e.,  $-.055$ ), but still not significant at any conventional level. One interpretation is that, when children suffer from a medical problem, then both permanently institutionalized and non-institutionalized children have a high risk of not being enrolled in school.

On the other hand, similar to our previous results, a child with medical problems who is institutionalized but not in the form of abandonment has a  $.218$  higher chance of being enrolled in school than a non-institutionalized child with medical problems.

## **5.2 Further results and sensitivity analysis**

### **5.2.1 The institutionalized children**

One point raised above was that school enrollment may depend on the “quality” of the institution the child came from; i.e., different institutions may influence school enrollment differently. To investigate this specific issue further we decided to *only* consider the institutionalized children and to use the institution fixed effects to answer the question: Are permanently institutionalized children more likely to be enrolled in school than institutionalized children with family contact?

This approach controls for unobserved institution characteristics (e.g. neglect) that might affect both child health and school enrollment. If these unobserved institution characteristics are negatively correlated with both investment in child education and child health, this will result in an overestimate of the effect of health on education enrollment in a simple OLS regression.

We begin in Table 4, Column 1, using the same controls as in our previous specification: female, age indicators, health, and whether the child is permanently institutionalized



(now the reference group is a child institutionalized with family contact). Not surprising, we find that a permanently institutionalized child is significantly less likely to be enrolled in school than an institutionalized child with family contact. In Column 2 we include an interaction term between being permanently institutionalized and medical problem. Additionally, we include the time spent in the present institution. Among institutionalized children with a medical problem, permanently institutionalized child are still less likely to be enrolled in school than the ones with family contact, but the marginal effect is rather small,  $-.008$ . Note that when we run the above without institution fixed effects the results (available upon request) are robust, but the latter marginal effect is overestimated,  $-.204$ . Next, we try to see whether it matters for the likelihood of being enrolled in school whether the institutionalized child is an orphan or a social orphan (Column 3) (the reference group is still institutionalized children with family contact). If healthy, both orphans and social orphans are significantly less likely to be enrolled in school. However, when we only consider children with medical problems, we do not find any significant differences between orphans and institutionalized children with family contact, while the marginal effect is negative and significant but very low ( $-.008$ ) for social orphans. Overall, being permanently institutionalized significantly lowers the likelihood of being enrolled in school when compared to institutionalized children with family contact. In other words, our results again reveal a failure of institutions and the welfare system to provide basic education for children that are completely dependent on them. Also, when we only consider children in institutional transit, i.e., we exclude children who enter the present institution directly from their families, the results (available upon request) are fairly robust; however, there is no significant difference in school enrollment between the permanently institutionalized with a medical problem and the institutionalized children with family contact. Finally, in the last column we control for different medical problems of the institutionalized children. HIV positive/severe malformation has a negative and significant impact on school enrollment. We find that children who suffer from a deficiency are also less likely to be enrolled in school, but the effect is much smaller. Note that here the possible unobserved decisions at the institutional level regarding both

health care (e.g., nutrition) and child education are controlled by the institution fixed effects.

**Table 4:** School enrollment of institutionalized children

	[1]	[2]	[3]	[4]
Female	0.004** (0.001)	0.003** (0.001)	0.003** (0.002)	0.004*** (0.002)
Age8	0.160*** (0.003)	0.160*** (0.003)	0.161*** (0.003)	0.161*** (0.003)
Age9 <i>equiv of elementary school</i>	0.211*** (0.003)	0.211*** (0.003)	0.212*** (0.003)	0.212*** (0.003)
Age10	0.216*** (0.003)	0.217*** (0.003)	0.216*** (0.002)	0.216*** (0.003)
Age11	0.221*** (0.003)	0.220*** (0.003)	0.220*** (0.003)	0.220*** (0.003)
Age12 <i>equiv of gymnasium school</i>	0.218*** (0.003)	0.218*** (0.003)	0.218*** (0.003)	0.217*** (0.003)
Age13	0.217*** (0.003)	0.216*** (0.003)	0.216*** (0.003)	0.216*** (0.003)
Age14	0.216*** (0.003)	0.216*** (0.003)	0.214*** (0.007)	0.215*** (0.003)
Age15	0.214*** (0.004)	0.213*** (0.004)	0.214*** (0.003)	0.213*** (0.004)
Medical	-0.022*** (0.004)	-0.032*** (0.005)	-0.033*** (0.004)	
Permanently institutionalized	-0.017*** (0.001)	-0.028*** (0.002)		
Orphan			-0.013** (0.006)	-0.008* (0.004)
Social orphan			-0.029*** (0.002)	-0.018*** (0.001)
Permanently institutionalized*Medical		0.020*** (0.003)		
Orphan*Medical			0.008 (0.009)	
Social orphan*Medical			0.021*** (0.002)	
Time in current institution		0.001*** (0.001)	0.001*** (0.001)	0.001*** (0.001)
Deficiency				-0.018*** (0.004)
HIV/severe malformation				-0.040*** (0.005)
Institution fixed effects	YES	YES	YES	YES
Observations	58,212	58,212	58,212	58,212
R <sup>2</sup>	0.13	0.12	0.12	0.14

Notes: \*\*\* significant at the 1% level, \*\* at the 5% and \* at the 10% level. We only include institutionalized children ages 7-15. We do not include juvenile delinquents and children from the reeducation schools. Source: Census of the institutionalized children, 1997. INSE, Romania.

### 5.2.2 Single parent children: Institutionalization or non-institutionalization?

In this section we would like to see whether permanently institutionalized children are at any particular disadvantage when it comes to school enrollment compared to the non-institutionalized children at the highest risk of not being enrolled in school. More specifically, we only consider a sample of all children, institutionalized or not, who we know came from single-parent households.<sup>38</sup> Remember our definition of a single-parent child refers to a child with one of the parents deceased or the father unknown/out-of wedlock births.

We find that healthy abandoned children are worse off in terms of school enrollment than healthy non-institutionalized children living in single-parent households (see Table 5). Moreover, if the child has a medical problem, it seems that he or she has a .214 lower chance of being enrolled in school if abandoned in the institution than if non-institutionalized. This marginal effect is significant at 1 percent level.

**Table 5:** School enrollment for single-parent children ages 7-15

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Medical problem	0.020 (0.025)
Permanently institutionalized	-0.045*** (0.011)
Family contact, institutionalized	0.030*** (0.010)
Medical*Perm institutionalized	-0.168*** (0.027)
Medical*Family contact	-0.036 (0.026)
Controls	YES
Observations	9,308
R <sup>2</sup>	0.22

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Notes: \*\*\* significant at the 1% level, \*\* at the 5% and \* at the 10% level. We only include institutionalized and non-institutionalized children ages 7-15, from single-parent households. We include all controls as in Column 3 of Table 3. Source: RIHS, 1995 and Census of the institutionalized children, 1997. INSE, Romania.

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<sup>38</sup> Running some simple probit/OLS regression on school enrollment for the non-institutionalized children (controlling for a wide range of child and household characteristics), we have found that the likelihood of being enrolled in school is significantly lower for children from single-parent households and children in the lowest income deciles households. These results are available upon request. Also, these results are similar when we control for the household fixed effects.

Thus, we find that, regardless of the health status, abandoned children coming from single-parent households are significantly less likely to be enrolled in school than non-institutionalized children at the highest risk of not being enrolled in school, i.e. children living in single-parent households.<sup>39</sup>

### 5.2.3 Sensitivity analysis

To further understand the school enrollment of institutionalized children compared to non-institutionalized same-age peers, we consider each cohort age 7-10 separately (the equivalent of the compulsory primary elementary school). Since we do not know the grade the child was enrolled in, we believe that it is informative to understand whether there are significant differences in school enrollment when considering e.g., cohorts age 7 and 8. This, in turn, sheds some light on an important aspect: delayed primary school enrollment.<sup>40</sup> However, note that a detailed discussion on enrollment cutoffs and the subsequent benefits/costs of delayed school enrollment is beyond the scope of this paper (see McEwan and Shapiro, 2008).<sup>41</sup>

The results are presented in Table 6, Panel A (full sample) and Panel B (without family transit institutionalized children). We observe that, similar to our previous findings, permanently institutionalized children who are healthy are significantly less likely to be enrolled in school compared to non-institutionalized same-age healthy peers; however, among children age 7, the likelihood of being enrolled in school is 35 percentage points lower for permanently institutionalized than for non-institutionalized, while among e.g. children age 9, is still negative and significant, but much lower (11 percentage points).

Even more interesting, for children age 7 and 8, the probability of being enrolled in school is lower for the institutionalized children with family contact than for the non-institutionalized children. Thus, healthy institutionalized children (permanently or with family contact) ages 7 and 8 are significantly *less* likely to be enrolled in school

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<sup>39</sup> If a single-parent child suffers from a medical problem, there is no significant difference in school enrollment between institutionalized with family contact and non-institutionalized children.

<sup>40</sup> By law a child should enter school in September of the year following the calendar year in which he/she reaches the age of 6. Pre-school education is provided in kindergartens to children age 3-6. In different specifications we have excluded children that were institutionalized after September, the school enrolment cutoff. The results are very similar.

<sup>41</sup> Empirical work in the US and in other OECD countries suggests that individuals born after enrollment cutoffs acquire less schooling on average (see e.g., Angrist and Krueger, 1991).

compared to non-institutionalized same-age peers. This may actually suggest a delay in school enrollment of the institutionalized children.

**Table 6:** Dependent variable: enrollment in school

Age	7	8	9	10
<i>The basic specification</i>				
Permanently institutionalized	-0.350*** (0.023)	-0.299*** (0.012)	-0.112*** (0.010)	-0.055*** (0.008)
Family contact, institutionalized	-0.148*** (0.019)	-0.085*** (0.010)	0.012** (0.006)	0.012** (0.005)
Medical*Perm institutionalized	0.359** (0.107)	-0.067 (0.067)	0.154 (0.116)	0.015 (0.137)
Medical*Family contact	0.429*** (0.106)	0.004 (0.065)	0.341*** (0.115)	0.205 (0.137)
Controls	YES	YES	YES	YES
Observations	3,472	6,335	7,571	8,666
R <sup>2</sup>	0.13	0.19	0.21	0.20
<i>Sample with no family direct transit in institution</i>				
Permanently institutionalized	-0.397*** (0.028)	-0.329*** (0.017)	-0.139*** (0.013)	-0.068*** (0.011)
Family contact, institutionalized	-0.263*** (0.038)	-0.125*** (0.020)	0.020* (0.011)	-0.001 (0.008)
Medical*Perm institutionalized	0.415*** (0.112)	-0.023 (0.069)	0.207* (0.112)	0.051 (0.138)
Medical*Family contact	0.356** (0.139)	-0.105 (0.077)	0.284** (0.113)	0.181 (0.139)
Controls	YES	YES	YES	YES
Observations	2,279	3,615	3,799	3,965
R <sup>2</sup>	0.18	0.25	0.22	0.20

Note: \*\*\*, \*\*, \* significant at the 1%, 5%, and 10% level. Each row represents a separate regression with controls as in Column 3 of Table 3. Source: Census of the institutionalized children, 1997. INSE, Romania.

If a child has a medical problem, we do not find significant differences on the likelihood of being enrolled in school between permanently institutionalized and non-institutionalized children for the considered cohorts. Among the children with medical problems, institutionalized children with family contact age 7 and 9 seem to be

significantly more likely to be enrolled than non-institutionalized children. The results in Panel B are fairly robust.

## **6. Conclusions**

Abandoned and institutionalized children constitute a major problem in many parts of the world, particularly in developing and transition countries. The present paper is based on a unique data set that covers all institutionalized Romanian children in 1997.

Our findings are an important step in understanding the abandonment and institutionalization process in a country that suffered through one of the most repressive pronatalist policies known to the world for more than 20 years. Although political demography is no longer a factor leading to institutionalization, we observe that despite a large decline in live births after 1990, the institutionalization rate (defined as the observed institutionalized children in 1997 relative to total live births, by birth cohorts) started increasing again after 1991. Of an even greater concern is the observed increase in the abandonment rate after 1991 (the social orphans observed in 1997 relative to total live births, by birth cohort).

The main results of this paper concern *school enrollment* of institutionalized 7-15 year old children. We find that orphans and social orphans (i.e., permanently institutionalized) are significantly disadvantaged in school enrollment compared to children living outside institutions. On the other hand, institutionalized children with family contact are more likely to be enrolled in school than non-institutionalized children. This effect may be because some families institutionalize their children only to get them enrolled in school and not as a form of abandonment. If this is indeed the case, then the institutionalization decision is likely to be endogenous in our main specification.

In the absence of a clean instrument, we consider different specifications and find that the effect on school enrollment depends on the child's health status: if healthy, permanently institutionalized children are still less likely to be enrolled in school than non-institutionalized healthy children, while we find no significant difference in school enrollment between institutionalized children with family contact and non-institutionalized children. However, among children with medical problems, we do not find a significant difference in school enrollment between permanently institutionalized

and non-institutionalized children, probably because both groups are at high risk of poor education. If a child has a medical problem and the family invests in his/her education, then the family may enroll the child in an institution/special school and then keep in contact.

Overall, our findings suggest that orphans and social orphans in state-run institutions are significantly disadvantaged in at least one important dimension – school enrollment – when compared to non-institutionalized children. Without educational intervention (or delayed) the future outcomes of these children seem harsh. This is of course only one negative aspect of institutionalization. Institutional life exposes children to other negative effects, including institutional dependence and emotional deprivation, which may make the children poorly equipped for independent living. Former institutionalized children are also more likely to become homeless, drug addicts, unemployed, to rely on public assistance, and to feel isolated from their peers; in addition, they are less likely to marry (see e.g., Doyle, 2007b, Vinnerljung et al., 2006).

Our analysis is only a first step in understanding different aspects of probably the most deprived category of children: the abandoned or unwanted children. The results here reflect the situation in 1997, which was basically inherited from the Ceausescu regime, before any welfare system reform. A second step would be to analyze whether the same pattern held following two main reforms. Another future line of research would be to get a clear understanding of the patterns of labor force status and income of youth who grew up in institutions, and how these patterns compare with those of similar-age youth in low-income families. Also, understanding what makes parents likely to abandon their children is of immense policy relevance to guide further policies to prevent abandonment, not only in Romania but all over the world. This is left for future work.

## References

- Alderman, H., Behrman, J., Lavy, V., and Menon, R. (2001) "*Child Health and School Enrollment: A Longitudinal Analysis.*" *Journal of Human Resources*, 36: 185-205.
- Angrist, J., and Krueger, A. (1991). "*Does compulsory School Attendance Affect Schooling and Earnings?*" *Quarterly Journal of Economics*, 106(4): 979-1014.
- Berelson, B. (1979). "*Romania's 1966 Anti-Abortion Decree: The Demographic Experience of the First Decade.*" *Population Studies*. 33, 209-222.
- Collins, M. (2001). *Transition to adulthood for vulnerable youth: A Review of Research and Implications for Policy.* *Social Service Review*, 75, 271-292.
- Courtney, M. E. (2000). "*Research needed to improve the prospects for children in out-of-home placement.*" *Children and Youth Services Review*, 22(9-10): 743-761.
- David, H., Zdenek D., Matejcek Z., and Schuller V. (1988). "*Born Unwanted: Developmental Effects of Denied Abortion*", Springer Publishing Company, NY.
- Donohue J., and Levitt, S. (2001). "*The Impact of Legalized Abortion on Crime.*" *Quarterly Journal of Economics* 116(May): 379-420.
- Doyle, J. (2007a) "*Child Protection and Child Outcomes: Measuring the Effects of Foster Care.*" *American Economic Review* 97(5): 1583-1610.
- Doyle, J. (2007b). "*Child Protection and Adult Crime: Using Investigator Assignment to Estimate Causal Effects of Foster Care.*" *Forthcoming in Journal of Political Economy*.
- Doyle, J. (2007c). "*Can't Buy Me Love? Subsidizing the Care of Related Children.*" *Journal of Public Economics* 91(February): 281-304.
- DPDI, (2005). "*Rights of People with Intellectual Disabilities. Access to Education and Employment*" (in Romanian), Ed. AMM, Cluj-Napoca, Romania.
- Fortson, J. (2007). "*The Effect of HIV an AIDS on Educational Attainment.*" Manuscript, Becker Center on Chicago Price Theory, Chicago University.
- Filmer, D. (2005). "*Disability, Poverty, and Schooling in Developing Countries: Results from 11 Household Surveys.*" *World Bank Policy Research Working Paper*, 3974.
- Glewwe, P., and Jacoby, H. (1995). "*An Economic Analysis of Delayed Primary School Education in a Low Income Country: The Role of early Nutrition*" *The Review of Economics and Statistics*, 1(February): 156-169.



- Grossman, M., and Jacobowitz, S. (1981). “*Variations in Infant Mortality Rates Among Counties of the United States: The Roles of Public Policies and Programs*” *Demography* 18(November): 695-713.
- Groza, V., Ileana, D., and Irwin, I. (1999). “*A Peacock or A Crow: Stories, Interviews and Commentaries of Romanian Adoptees*”, Williams Custom Publishing.
- Gruber, J., Levine, P., and Staiger, D. (1999). “*Abortion Legalization and Child Living Circumstances: Who is the 'Marginal Child'?*” *Quarterly Journal of Economics* 114 (February): 263-291.
- Greenwell, K. (2003). “*The Effects of Child Welfare Reform on Levels of Child Abandonment and Deinstitutionalization in Romania, 1987-2000.*” Dissertation Thesis, University of Texas at Austin.
- Jones, A. and O'Donnell, O. (1995) “*Equivalence Scales and the Costs of Disability.*” *Journal of Public Economics*, 56(2): 273–89
- Kligman, G. 1998. “*The Politics of Duplicity: Controlling Reproduction in Ceausescu's Romania*”, Los Angeles: University of California Press.
- Kligman, G. (1988). “*The Wedding of the Dead. Ritual, Poetics, and Popular Culture in Transylvania*”, Los Angeles: University of California Press.
- Kurtz, P., Gaudin, J., and Howing, P. (1993). “*Maltreatment and the School-Aged Child: School Performance Consequences*” *Child Abuse and Neglect*, 17: 581-589.
- Maclean, K. (2003). “*The Impact of institutionalization on child development*” *Development and Psychopathology* 15: 853-884.
- McEwan, P., and Shapiro, J. (2008). “*The Benefits of Delayed Primary School Enrollment.*” *Journal of Human Resources*, 43 (1): 1-29.
- Morison, S. J., and Ellwood, A. L. (2000). “*Resiliency in the aftermath of deprivation: A second look at the development of Romanian orphanage children.*” *Merrill-Palmer Quarterly*, 46, 717-737.
- Nelson, C., Zeanah, C., Fox, N, Marshall, P., Smyke, A., and Guthrie, D. (2007). “*Cognitive Recovery in Socially Deprived Young Children: The Bucharest Early Intervention Project.*” *Science* 318.
- Pop-Eleches, C. (2006). “*The Impact of a Change in Abortion Regime on Socio-Economic Outcomes of Children: Evidence from Romania.*” *Journal of Political Economy*, 114(4): 774-773.

Pop-Eleches, C. (2007). "Abortion and Child Cognitive Outcomes." Manuscript, Department of Economics, Columbia University.

Rogow, S. (1999). "Hitler's Unwanted Children: The Story of Children with Disabilities in Nazi Germany." Monograph, University of British Columbia.

Serbanescu, F., Morris, L., Stupp, P. and Stanescu, A. (1995) "The Impact of Recent Policy Changes on Fertility, Abortion, and Contraceptives in Romania." *Studies in Family Planning*, 26: 76-87.

UNICEF (1997) and National Committee for Child Protection, Government of Romania. "Situatia copilului si a familiei in Romania."

UNICEF (2001). "A Decade of Transition." Regional Monitoring Report, Innocenti Research Center.

UNICEF (2004). "Child Care System Reform in Romania."

UNICEF (2005). "The Situation of Child Abandonment in Romania."

Vinnerljung, B., Sundell, K., Löfhol, C., and Humlesjö, E. (2006) "Former Stockholm Child Protection Cases as Young Adults: Do Outcome Differ Between Those that Received Services and Those that Did Not?" *Children and Youth Services Review*, 28: 59-77.

WorldBank (2003). "Romania poverty assessment."

Zamfir, E. (1997). "Social Services for Children at Risk: The Impact on the Quality of Life." *Social Indicators Research* 42: 41-76.



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