

A MICRO-ECONOMETRIC ANALYSIS OF THE ANTIPOVERTY EFFECT OF SOCIAL CASH TRANSFERS IN ITALY

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We analyze the anti-poverty effect of social cash transfers using a micro-econometric approach. Aggregate analyses, based on comparing average poverty indicators before and after public transfers, fail to address who receives the transfers and how the transfers are distributed among the poor. We consider three dichotomous outcome variables: (i) poverty status before the receipt of transfers; (ii) the receipt of transfers; and (iii) poverty status after the receipt of transfers. We use a trivariate probit model with sample selection, connecting the outcome variables to the characteristics of the household and its head. Our empirical results highlight that the Italian social transfers system overprotects certain household typologies at the expense of others, as social transfers are primarily awarded to employees with permanent positions and the elderly, while the system is not generous enough to large households with dependant children, the self-employed, temporary contract workers, and the unemployed.

JEL Codes: C35, H24, I32

Keywords: cash transfers, pre/post-transfers poverty, sample selection, trivariate probit

1. INTRODUCTION

In this paper, we analyze the anti-poverty effect of social cash transfers using a micro-econometric approach. Specifically, we consider household-level data and focus on three dichotomous outcome variables: (i) poverty status before the receipt of transfers; (ii) the receipt of transfers; and (iii) poverty status after the receipt of transfers (for those households that were poor before the transfers were issued). We express the expected values of these variables as functions of the characteristics of the household and its head. Specifically, the model makes it possible to understand which household characteristics are primarily associated with poverty status based on pre-transfer income and which are associated with the receipt of social transfers; the extent to which these characteristics are the same; whether poor households are more likely to receive transfers than non-poor households and the main determinants of the receipt of transfers among the poor; the extent to which the transfers contribute to reducing poverty; and which household characteristics are most associated with the transition between poverty and non-poverty status, given that the household has been identified as poor in terms of pre-transfer income.

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The household characteristics considered here are household type (based on size and age composition), region of residence, and the presence of a disabled person in the household. The characteristics that we consider for the household head (defined as the person with the highest income in the household) include age, gender, education, and labor market status. More details on the definitions of these variables may be found in Section 3.

We note that social transfers are only one component of social spending, and public interventions to address poverty are not limited to transfers (tax relief schemes and service provision are just two examples of other interventions). This paper does not concern how poverty is addressed in general; instead, it focuses on how efficient social transfers are in this respect.

Studies regarding social cohesion and the policies designed to foster it often highlight a positive correlation between the resources allocated to social transfers and a reduction in the poverty rate observed by comparing pre-social transfers evaluations to post-social transfers evaluations (Heady *et al.*, 2001; Prasad, 2008; Nolan and Marx, 2009; Caminada *et al.*, 2010). However, aggregate analyses fail to address how social transfers interact with the composition of the poor population, inasmuch as eligibility and the actual receipt of transfers depend on individual or household characteristics. Moreover, although empirical analyses based on micro-data regarding how the transfer system benefits the poor dates back to Lampman (1966), relatively few studies (Addabbo and Baldini, 2000; Lohmann, 2009) use a micro-econometric approach to analyze how social transfers are allocated across households and whether there are social groups among the poor population that are beyond the scope of or are not effectively reached by the transfers.

To analyze the three considered outcome variables and achieve the aims of this study, we propose a trivariate probit model with sample selection. This model has two properties that are important for this analysis. It allows for the correlation of residuals across equations (thus leading to efficiency improvements) and the estimation of cross-equation marginal effects. Moreover, as the third variable is defined on a self-selected subsample, it enables us to determine whether this selection process introduces bias and, eventually, to address it. In the application considered in this paper, the selection process is ignorable. The first two dichotomous variables are modeled using a bivariate probit, whereas the equation for the third is estimated separately.

We estimate the model using IT-SILC data. The IT-SILC is the Italian survey on Income and Living Conditions released by the Italian National Institute of Statistics (ISTAT) on the basis of Regulation (EC) No. 1177/2003 concerning the Project EU-SILC (European Union Statistics on Income and Living Conditions). The EU-SILC survey is conducted with similar sampling designs, methodology, and definitions across most EU countries. Therefore, the exercise we present for one country may be easily replicated for others. Moreover, the Italian case may be of interest in its own right. Italy is the fourth largest economy in the EU; its social protection system (that is briefly described in Section 2.2) suffers from low levels of both equity and efficiency (Sapir, 2006), with social expenditures that are biased toward the protection of employees with permanent positions and the elderly, characteristics that are shared by the social protection systems of other Southern

European and Mediterranean countries (Bonoli, 1997; Torrisci, 2010). The defects of Italy's social transfer system hinder necessary economic reforms such as those related to the labor market. For a discussion on the historical evolution in the Italian case and a comparison of the Italian system to those of other European countries, see D'Apice and Fadda (2003).

The data we analyze are from the 2007 wave of the survey; hence, the income reference year is 2006. Note that the year selected for the analysis is not characterized by the effects of the economic downturn or by special measures undertaken during the crisis with respect to unemployment benefits and wage supplementation funds. The year selected for analysis can therefore offer a more structural picture of the operation of institutions and social cash transfers systems in Italy.

IT-SILC data provide very rich information regarding household income, social transfers, and the characteristics of the households and individuals within the households. The social transfers detected by IT-SILC are then aggregated into common categories across EU countries in the EU-SILC. We consider those common categories.

Nonetheless, some limitations should be clarified in advance. Specifically, only social cash transfers (SCTs) are considered. Consequently, we cannot thoroughly evaluate the efficiency of the transfer system because this would require the consideration of in-kind transfers that, for Italy, were equivalent to 12 percent of GDP in 2008 (OECD, 2009).

We exclude old-age pensions from SCTs because they can be considered primary income: their principle role is to redistribute resources over individual life-cycles and/or generations, not just between income groups (European Commission, 2008). Throughout this study, we treat old-age pensions as a component of pre-social transfer income. However, in our analysis, we add social pensions paid to Italians aged 65 or over, regardless of their work histories, to the SCTs.

We analyze the actual receipt of transfers, which reflects the effect of eligibility and the effective take-up of the transfers. We do not have any information regarding non-take-up in our dataset. More generally, circumstantial evidence for the non-take-up of social transfers in Italy is lacking. As the non-take-up of transfers is relevant for all of the countries for which data are available (Hernanz *et al.*, 2004), and it may depend on household characteristics such as gender and nationality of the head of the household, and the characteristics of the transfers (the complexity of bureaucratic procedures and the likely amount of the transfer), we will consider non-take-up as a possible explanation for some of the evidence we obtain.

Our analysis implicitly assumes that the receipt of transfers does not imply any change in the behavior of individuals, specifically their labor market behavior, an assumption that is non-trivial for unemployment benefits and family allowances. Nonetheless, this assumption is relatively weak in the Italian case, as unemployment benefits are, in most cases, provided for a limited amount of time and are not very generous (see Section 2.2); family allowances are also not generous (Del Boca *et al.*, 2009).

The central results of our research on Italy are that most of the transfers are related to the employment status (previous or current) of the beneficiary. This advantages households with at least one employed family member, and these

households are less likely to be poor. Households with all of their members outside the core sector of the labor market are discriminated against; the same is true for families with children, as transfers grow more slowly, with equalized family size, than the risk of poverty. Transfers related to disability and the lack of self-sufficiency are characterized by very limited means testing.

To the best of our knowledge, this research represents the first micro-econometric joint analysis of the determinants of poverty status, social transfers receipt and changes in poverty status due to the receipt of transfers applied to European data and more specifically to the Italian case. It allows for the analysis of social transfers with respect to poverty reduction, regardless of the multiple, often contrasting goals pursued through social expenditures on social transfers. It may provide evidence that is useful for reform planning wherever social transfer systems are not explicitly designed to combat poverty and are the result of complex historical processes.

The paper is organized as follows. In Section 2, we provide both a review of the literature regarding the anti-poverty impact of transfers and a short overview of the system of social transfers in Italy. Section 3 provides a brief review of the EU-SILC survey and describes the variables included in the econometric model. In Section 4, some statistics regarding poverty and social transfer allocations are summarized. The econometric methodology employed is described in Section 5. The results obtained from the estimation of the model are presented in Section 6, which is followed by concluding remarks in Section 7.

2. BACKGROUND

2.1. Literature Review

Many studies have attempted to evaluate whether transfers have the effect of reducing poverty or, more generally, a redistributive impact (Garfinkel, 1990; Atkinson, 2000; Heady *et al.*, 2001; Prasad, 2008; Nolan and Marx, 2009; Caminada *et al.*, 2010). Most of these studies focus on the effect of public transfer programs by comparing countries in terms of their social protection expenditures and measures of poverty. With respect to the European Union (EU), studies involving measures of poverty have been stimulated by the availability of the European Community Household Panel (ECHP), running from 1994 to 2001, which was replaced by data collected under the EU-SILC in 2003. These surveys have provided information that is comparable across countries to an unprecedented extent in this context.

Here we briefly present the results of those studies that evaluate the connection between social transfers and poverty by adopting a macroeconomic perspective.

In general, the results highlight a negative relationship between poverty indicators and spending on social transfers. The countries with the lowest poverty rates spend the most on social benefits. In the absence of social transfers, the average poverty rate for EU Member States is 26 percent, but this declines to 16 percent after transfer receipt is considered (European Commission, 2008). Nolan and Marx (2009) state that there is a strong relationship between the level of social

spending and poverty, such that a 1 percent reduction in social spending is connected to a 1 percent increase in the poverty rate. Prasad (2008), in a study of 64 OECD countries, finds a very strong negative correlation (0.75) between spending on social transfers and inequality as measured by the Gini index. Caminada *et al.* (2010) obtain more ambiguous results when employing the OECD Social Expenditure database: the strong negative relationship between the level of public social spending and poverty in 28 OECD countries is attenuated when only analyzing EU15 countries.

Italy's transfer scheme has one of the lowest impacts on the poverty rate (the rate is reduced by 18 percent compared to 50 percent among Nordic countries). Furthermore, in a comparative study involving many EU member states, De Neubourg *et al.* (2007) note that in Italy, means-tested benefits spending measured as a proportion of total social security spending was less than 5 percent in 2003. Heady *et al.* (2001) focus on the distributional effect of SCTs for EU13 member states and show that the correlation between reductions in inequality and the share of GDP allocated to transfers is imperfect. For example, Italy spends more than the U.K. on cash transfers as a percentage of GDP, but the percentage reduction in inequality is lower than in the U.K. Focusing on poverty and distinguishing among various types of benefits, Heady *et al.* (2001) also note that, in Italy (as in other southern European countries such as Greece and Portugal), sickness, invalidity, unemployment, and household-related benefits (in the case of Italy, the family allowance and parental leave benefits along with those related to caring for disabled dependants) have a very low impact on alleviating poverty in general. The study concludes by stating that, in general, countries with a high degree of means testing have high marginal impacts on poverty and inequality. However, they also note that transfers can be well targeted without extensive means testing (as they are in Denmark). The potential drawbacks of targeted programs have been well illustrated through the so-called "paradox of redistribution." The researchers that support the universal system claim that the targeted system is seemingly more redistributive because, by operating with narrower political and social support, it may rely on a lesser amount of transferred resources and thus have less impact in terms of reducing inequality (Korpi and Palme, 1998; Kenworthy, 2011).

Smeeding *et al.* (2012) analyze the size of the antipoverty effect of government social transfers using Luxembourg Income Study and European Household Community Panel data for 12 countries. As a measure of the antipoverty effect, they adopt the difference between the poverty rate based on disposable income and the rate based on "before-tax-and-transfer" market income. By focusing on immigrant households, they find that in most countries the antipoverty effect is larger for the native population than for immigrants and that the average reduction in poverty is approximately 65 percent for the former group and approximately 60 percent for the latter group. In Italy, the difference in poverty reduction between the majority and immigrants exceeds 10 percent. The authors attempt to explain why different types of households are differently affected by social programs by stating that the limited overall effects of the policy may be due to the presence of many low wage working families that receive a low amount of transfers among immigrants.

The above-mentioned studies provide information on the aggregate impact of social transfers on poverty. In adopting the macroeconomic perspective, they

focus on average effects, thus failing to recognize that the impact on individual households may be very far from the mean, as this depends on household characteristics. We may observe that “on average” is not a satisfactory statement with which to conclude a study on a heterogeneous population. A similar criticism of the macroeconomic approach may be found in Kittel (2006).

Few papers have adopted a microeconomic approach for the analysis of the antipoverty effect of transfers. Lohmann (2009) studies the reduction of the incidence of in-work poverty. Using 2005 EU-SILC, OECD, and EUROSTAT data, he conducts two separate analyses to examine which factors are connected with pre-transfer poverty and which are connected with exiting poverty due to transfers. The author adopts two independent logit models and demonstrates that “for some groups with high poverty risks, transfers clearly work against their disadvantageous position in the pre-transfers distribution of income,” but also that some groups (i.e., the self-employed, migrants, and low-level workers) face higher pre-transfer poverty rates and, simultaneously, a lower probability that poverty will be reduced by transfers.

Regarding Italy, Addabbo and Baldini (2000) studied the efficacy of social transfers in alleviating poverty. Using information from the Bank of Italy’s Survey of Household Income and Wealth, these authors examine the socioeconomic groups that are less likely to benefit from social transfers and whether there are some segments of the population that are particularly exposed to the risk of poverty and are also excluded from social transfers. The authors find that social transfers reduce the average poverty rate, but the reduction is more pronounced for people over 60 years of age and less pronounced for households with children and those located in the South of Italy. Moreover, their analysis demonstrates that the probability of receiving transfers is particularly low in households with children for both self-employed and unemployed individuals.

2.2. *Social Transfers in Italy*

The level of social spending in Italy is in line with the EU average, at approximately 26 percent of GDP in 2006 (Eurostat, 2012a). Italian social spending is biased toward old age and survivor pensions that absorb more than 60 percent of the resources (Kuitto, 2011); thus, the amount that remains to finance other forms of assistance is appreciably below what is spent in other large EU economies such as France, Germany, or the U.K.

SCTs tend to overprotect workers with permanent positions and regular contracts and the elderly. For example, unemployment benefits are limited in scope: only employees with past contribution histories of at least two years are eligible. Self-employed workers and younger individuals seeking their first jobs are excluded. The amount and duration of the benefits are also limited: 50 percent of the salary for a duration of six months that may be extended to nine months for workers aged 50 or above (in 2006). Unemployment benefits are complemented by wage supplementation programs (“Cassa integrazione guadagni”), aimed at protecting workers’ incomes and jobs in the event of temporary crises at their firms. Traditionally reserved for the employees of large industrial firms and characterized by a limited duration (ordinarily three months but potentially extended up to one

year), this program was only extended to employees of smaller firms during the crisis that began in 2008.

Old-age pensions below a given threshold are supplemented to reach that threshold to guarantee a decent standard of living for retirees. People aged 65 or over receive a social pension if they are not entitled to an old-age pension, while, in contrast to most EU countries, transfers to provide minimum income levels for the general population do not exist. This situation exists because the system of social transfers originally only targeted public sector and industrial workers, and it has been successively extended and supplemented by an accumulation of fragmented and ad-hoc interventions.

The country is characterized by several layers of government: the central government and institutions (such as the National Institute of Social Security, INPS), administrative regions (15 ordinary statute plus 5 special statute), provinces and local health agencies nested within regions, and, eventually, municipalities. In addition to general guidelines, principles, and budgets set at the national level, regional governments have their own social spending policies and budgets, particularly in the areas of housing allowances and addressing social exclusion. For instance, minimum income programs may exist at the local level, although they do not exist at the national one.

Fragmentation and bias toward old-age pensions make the Italian welfare system fit perfectly into the Mediterranean model of welfare constructed by Bonoli (1997) and Ferrera (1996) to classify the welfare policies of European countries. Another distinguishing feature of the system of social transfers in Italy is that transfers are primarily distributed to individuals according to individual eligibility criteria. Little attention is paid to household composition, and the same is also true for the tax-benefit system, which is not generous enough to large households with children (see Figari *et al.*, 2011). Moreover, access to rationed public services is means tested in a very fragmented manner, generating different levels of access to services by the same type of household living in different municipalities. This may be relevant to the labor supply behavior of a household's members.

The system of means testing is complicated and inconsistent. Different rules apply to different transfers. Means testing may be based on the sum of all household members' incomes (e.g., the family allowance), the income of the individual (benefits paid to disabled citizens, i.e., "pensione di inabilità per invalidi civili" in Italian) or the individual and his spouse (welfare checks paid to elderly individuals without other sources of income—"assegno sociale"). Moreover, there are transfers that are not means tested at all (e.g., the attendance allowance—"indennità di accompagnamento"). A tentative reform based on considering a synthetic indicator of both income (from all sources) and wealth at the household level, known as ISEE, is now applied by some regional governments, especially for means testing the entitlement to social services and determining fees, but its impact is still limited for social transfers paid by the central government and agencies, which continue to be the most relevant.

Generally speaking, the family allowance is the most efficiently means-tested transfer (and employs a proxy for total household income to determine means), but its amounts are on average low and its scope is limited, as only employees and

retirees are entitled to receive it. At the other extreme, disability-related transfers are very inefficiently means tested, as the above-mentioned benefits paid to disabled citizens and attendance allowance testify.

3. DATA SET AND MODEL VARIABLES

The EU-SILC survey is designed to collect timely and comparable cross-sectional and longitudinal micro-data regarding income, poverty, social exclusion, and living conditions (European Parliament and Council, 2003; Eurostat, 2005a). The sample design employs a rotating panel based on a methodology and definitions that are consistent across most EU member states. The survey is conducted in each country by the relevant national institute of statistics (in Italy, by ISTAT) and coordinated by Eurostat, the Statistical Bureau of the EU. In Italy, the first wave of the EU-SILC survey was launched in 2004. In this paper, we analyze data from the 2007 wave. The income reference period is 2006.

In the rotating panel, the samples of two successive years have a 75 percent overlap (in the absence of attrition). The new component of the sample is drawn according to a stratified, two-stage sampling design. The effective sample of the 2007 wave of the survey contained 20,982 households and 52,772 individuals.

In the EU-SILC survey, SCTs are defined as current transfers received during the income reference period by households and are intended to relieve households of the financial burden of a number of risks or needs (Eurostat, 2007). SCTs can be classified as transfers to households and transfers directed to specific individuals within households, as illustrated in Table 1.

Transfers in the residual category “social exclusion not elsewhere classified” encompass transfers provided in the framework of diverse income support programs, implemented in most cases at the regional, provincial, and municipal levels. At the national level, the experimental policy of providing a minimum income (“Reddito minimo di inserimento”) was discontinued in 2006, while the transfer

TABLE 1
CLASSIFICATION OF SOCIAL TRANSFERS (MAIN ITEMS IN ITALY)

| Recipient | Type of Transfer |
|------------|--|
| Household | <ul style="list-style-type: none"> • Family/children-related allowances (family allowances paid to a member of a household with dependant children; parental leave benefits; allowance for households with at least three children; allowance in the event of the birth of a second child) • Housing allowances (rent benefit; benefit to alleviate current housing costs excluding rent; benefit to alleviate the interest on the mortgage) • Social exclusion not elsewhere classified (minimum subsistence, minimum income inclusion (RMI), other cash benefits from public or private entities to families in need) |
| Individual | <ul style="list-style-type: none"> • Social pensions • Unemployment benefits (full and partial unemployment benefits; mobility and resettlement benefits; benefits for early retirement for labor market reasons) • Disability benefits (disability benefits and pensions; attendance allowances or other cash benefits for disability) • Education related allowances (grants; scholarships and other education assistance received by students) |

program named “social card” only began in 2008. At the regional level, if we limit our attention to universal income support programs, the Campania administrative region launched the citizenship income (“Reddito di cittadinanza”) program in 2004 to support the incomes of families facing extreme poverty conditions, while basic income programs were also active in Friuli-Venezia Giulia, Trento province and the Basilicata region in 2006. There are also programs aimed at supporting the incomes of groups with a high risk of social exclusion at the regional and lower administrative levels that are difficult to describe and recover using the IT-SILC questionnaire data.

In Italy, old-age pensions below a given threshold are supplemented to meet the threshold; although this constitutes an SCT, from a practical perspective it is too difficult to measure the supplement component and it will not be considered in this analysis. Moreover, after reforms to the pension system in the 1990s, this supplement will be absorbed by social pensions and is therefore not interesting from a policy perspective.

As noted in the introduction to this paper, we consider a trivariate probit model. We now describe the dependent variables in the three probit equations. Eurostat defines the standard poverty threshold as 60 percent of the national median equivalized income. Equivalized income is calculated by dividing total disposable household income by an equivalence factor calculated according to the modified OECD scale. Because equivalized income is the same for all members of a household, we can define the poverty indicator at the household level. Note that the poverty threshold is based on disposable income and includes SCTs. To describe the situation of households before the receipt of transfers, we define a poverty indicator considering the equivalized pre-transfer income. We label this indicator variable y_1 .

A second key variable in this research is the indicator of transfer receipt. We denote this variable y_2 . Of the group of households that receive transfers, we exclude those that receive a very small total value of SCTs that can be considered irrelevant to the economic status of the household. We set the threshold at 504€ (on an annual basis), which corresponds to the 25th percentile of the SCT distribution at the household level. The histogram of the annual amount of SCTs received at the household level is presented in Figure 1. In this representation, we excluded the largest 0.5 percent of the observed values, as they are much larger than the rest of the sample. Its extreme skewness is consistent with the transfers being scattered across many different programs without a global design and often under-financed, with many households receiving very small, irrelevant amounts.

We also replicate the analysis by alternatively adopting the 5th and the 10th percentiles; the results we obtain are largely robust to these different choices.

The third variable is an indicator of poverty status based on equivalized income including SCTs (y_3). Of course, we can only evaluate the impact of transfers on poor households for those that were poor prior to receiving transfers.

The use of dichotomous variables (whether a household’s equivalent income is below the poverty line) to analyze poverty determinants has been criticized (Ravallion, 1996) when information regarding the underlying continuous variable is available. To address this criticism, Meng *et al.* (2007) propose estimating the probability of being poor by inserting the coefficients estimated from a linear

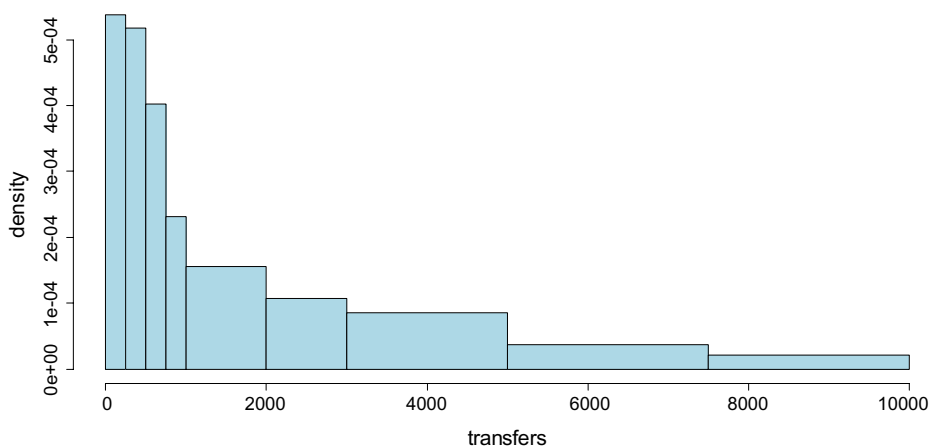


Figure 1. Histogram of the Annual Amount of SCTs Among Households (euro)

Source: IT-SILC 2007 data.

regression on the log of household income into a probit equation. For our data, the coefficients estimated in the probit equation are largely consistent with those obtained using Meng's method (in line with the findings of Meng *et al.*, 2007). The probabilities of being poor estimated using the two methods exhibit a strong correlation.

In the first two probit equations, the same vector of regressors is used to highlight the factors that significantly affect both phenomena simultaneously, neither of them, or only one of them, and to compare the signs and sizes of the coefficients for those factors with significant results for both phenomena. These regressors have been selected based on the results obtained in previous studies on the topic (Moller *et al.*, 2003; Gardiner and Millar, 2006; Lohmann, 2009). The first group of regressors is composed of household characteristics. Many studies have shown a strong correlation between poverty and some household characteristics (e.g., its composition), and some household types are markedly more exposed to the risks of poverty and social exclusion than others (Christopher *et al.*, 2002; Eurostat, 2005a, 2005b). It is also probable that SCTs, although not explicitly directed to particular household types, target situations linked to household composition. Therefore, we include the nine household types defined in the EU-SILC survey among the explanatory variables. The definitions of these types consider both the size and the age composition of the household. Specifically, the nine household types are defined as follows: 1, one-person households; 2, two adults, no dependant children, both adults under 65 years; 3, two adults, no dependant children, at least one adult 65 years of age or over; 4, other households without dependant children; 5, single parent household, one or more dependant children; 6, two adults, one dependant child; 7, two adults, two dependant children; 8, two adults, three or more dependant children; and 9, other households with dependant children. A dependant child is defined as a person under the age of 16 or aged between 16 and 24 but economically inactive. To avoid collinearity, the household type "Two adults, one dependant child" is aliased during the estimation.

Given the well-known low degree of regional cohesion that characterizes Italy (European Commission, 2005) and the important role that local governments play in some social policies, the administrative region of residence (20 categories) is also included as a regressor. For this group of indicator variables, the Lazio region (where the national capital, Rome, is located) is taken as the reference category. This region is in an intermediate position between the affluent North and poorer regions of the South, not only geographically, although these macro-areas are far from homogeneous in terms of poverty (see Fabrizi *et al.*, 2008). We also consider the dichotomous variable “illness,” which is equal to 1 when one or more members of the household suffer from any chronic (long-standing) illness or disability.

A second group of regressors contains the characteristics of the head of the household, who is defined as the “breadwinner,” i.e., the individual with the highest total income in the household. The characteristics of the household head included in our model are as follows: gender; a quadratic function of age; citizenship (divided into Italian/non-Italian); education (represented by a categorical variable with four levels: elementary school, lower secondary education, upper secondary education, and university degree); and labor market condition (represented by a categorical variable with seven levels: employee with permanent work, employee with temporary work, self-employed, self-employed with temporary contracts (co.co.co.), retired, unemployed, and other inactive person). We distinguish between self-employed and self-employed with temporary contracts (i.e., having a contract for coordinated and continuous collaboration or a contract for a project collaboration with a single customer, in short “co.co.co” or “co.co.pro.”) because after reforms that introduced greater flexibility in the Italian labor market (and especially the “Treu package” of 1996), the number of workers with temporary contracts increased substantially. To avoid collinearity, the categories “elementary school” and “employee with permanent work” are aliased. We also include the usual number of hours worked per week and the number of years spent in paid work.

In the equation we use for modeling y_3 , in addition to the regressors considered in the first two equations, we consider indicator variables for the various types of SCTs and the relative poverty gap (defined as the distance between the income of poor families and the poverty line as a percentage of the poverty line).

4. SOME DESCRIPTIVE STATISTICS

From a simple analysis of our sample, we note that 24 percent of the households are poor before transfers (i.e., the equivalized pre-transfers income is below the poverty threshold), while 43 percent of them receive transfers (of any amount). If we estimate the ordinary poverty rate (based on counts of individuals), we find that 24 percent are poor before transfers, while the percentage of individual members of households receiving transfers is 52 percent. The percentage of poor after transfers is 20 percent for both households and individuals. Regarding transfer receipt, 53 percent of poor households and 39 percent of non-poor households receive transfers; the same percentages estimated for individuals are 64 percent for poor and 49 percent for non-poor individuals. We note that the proportions of poor and non-poor receivers are not dramatically different, an indirect indicator of

poor vertical expenditure efficiency. Moreover, the higher estimates obtained for individuals who receive SCTs with respect to households, highlight that very small households are less likely to receive SCTs. This is consistent with the family and children related allowances being the more diffuse type of transfers; moreover, the estimates may be biased by the fact that the supplementing of old-age pensions to meet a specified minimum threshold is not recorded as a transfer distinct from old age pensions. Eventually, we note that 30 percent of the pre-transfers poor households receiving transfers leave poverty after the transfers, and this percentage is 29 percent if calculated for individuals, evidence of the very limited anti-poverty effectiveness of transfers received by larger households. If we consider the amount of SCTs, we note that only 18 percent of the total is devoted to households in the first decile of the equivalized income distribution, and 34 percent is devoted to poor households. For example, 57 percent of social pensions, 61 percent of family allowances, and 52 percent of disability benefits are received by non-poor households.

Table 2 presents some useful figures for understanding the distribution of SCTs considered in this paper.

The most widespread SCTs are “Family/children related allowances” (allocated to 27 percent of households) and “Unemployment benefits” (allocated to 17 percent of households). In terms of the average amount received, the largest SCTs are “Social exclusion not elsewhere classified” (6,314 euros), “Disability benefits” (5,673 euros), “Social pensions” (4,489 euros), “Education related allowances” (3,525 euros), and “Unemployment benefits” (3,424 euros). All SCT amounts vary greatly among those households that receive them, as indicated by their coefficients of variation (CV), and exhibit unimodal, positively skewed distributions.

We note that poverty in Italy, evaluated with respect to a national poverty line, varies substantially across both administrative regions and household types. The poorest regions are in the South (Molise, Campania, Puglia, Basilicata, Calabria, and Sicilia) both in terms of the prevalence of poverty (the poverty rate varies between 31 and 42 percent among these regions) and its severity, with a gap value between 9 and 14 percent (the index for the nation as a whole is 6 percent). We consistently find that SCTs are primarily allocated to households in these regions, with the sole exception of Molise, which is replaced in the set of the regions receiving the most SCTs by Sardegna, a special statute region. The percentages of

TABLE 2
SCTs DESCRIPTIVE STATISTICS

| Annual Transfers | % of Households in Receipt of SCTs | Mean (euro) | Median (euro) | CV |
|---|------------------------------------|-------------|---------------|-------|
| Family/children related allowances | 27 | 997 | 546 | 4,327 |
| Housing allowances | 2 | 1,268 | 796 | 5,318 |
| Social exclusion not elsewhere classified | 1 | 6,314 | 3,600 | 3,444 |
| Unemployment benefits | 17 | 3,424 | 1,960 | 4,976 |
| Disability benefits | 6 | 5,673 | 3,900 | 2,418 |
| Education related allowances | 1 | 3,525 | 924 | 5,671 |
| Social pensions | 3 | 4,489 | 4,043 | 1,536 |

Source: IT-SILC 2007 data.

households receiving SCTs in these regions range between 51 and 58 percent. Next, we observe that the household types with the greatest share of poor households are “Single parent household, one or more dependant children” and “Two adults, three or more dependant children.” These household types have poverty rates and poverty gaps that are much larger than the other household types (the poverty rates reach 31 and 41 percent and the poverty gaps are 14 and 13 percent, respectively), but the percentage of “Single parent, one or more dependant children” households receiving SCTs is lower than the percentage observed for the other household types with dependant children.

In this respect, if we compare the poverty status of single parent households in European countries on the basis of Eurostat statistics, we find that similar situations may be found in other southern European countries, where the percentage of single parent households is lower than in the other EU countries (2.6 percent in Italy while the European average was 4.8 percent in 2006). The poverty rate for single parents in Italy is somewhat lower than the EU average (31.9 and 32.5 percent in 2006), while the poverty rate for two adults, three or more dependant children is particularly high in Italy with respect to Northern Europe (40.8 percent in Italy while 25.8 percent is the European average, Eurostat, 2012b).

In Italy, if the single parent is male, the household is equally at risk of poverty as a couple without children. Therefore, the problem concerns single mothers, which is the most common single parent household type in Italy (86 percent of single parent households in 2003, according to European Commission, 2007). Gender issues for single parents households are connected to women’s reduced access to the labor market, the rationing of public childcare services, and the persistence of a gender wage gap that disadvantages women in Italy (see Del Boca, 2002; Addabbo and Favaro, 2011). For single parent households, per-capita expenditures on social benefits equaled 283.2 euros in 2006, much lower than the European average of 542.5 euros. These findings reflect the lack of social policies and transfer schemes explicitly targeting single parent households as discussed in Section 2.2.

5. ECONOMETRIC MODEL

We propose to use a trivariate probit model with sample selection (Greene, 2008, pp. 895–96) to analyze the following dependent variables:

$$\begin{aligned}
 y_{1i} &= \begin{cases} 1 & \text{whether the } i\text{-th household is poor before social transfers} \\ 0 & \text{otherwise} \end{cases} \\
 y_{2i} &= \begin{cases} 1 & \text{whether the } i\text{-th household receives social transfers} \\ 0 & \text{otherwise} \end{cases} \\
 y_{3i} &= \begin{cases} 1 & \text{whether the } i\text{-th household is not poor after social transfers} \\ 0 & \text{otherwise} \end{cases}
 \end{aligned}$$

The multivariate specification we consider allows for correlated residuals across equations. The model for y_3 is estimated using a group of self-selected

households. Those who are poor before receiving SCTs and receive SCTs may change state, from poor to non-poor, such that $Pr(y_{i3} = 0|y_{i1} = 0) = 1$ and $Pr(y_{i3} = 1|y_{i1} = 1 \cap y_{i2} = 0) = 0$. To obtain unbiased estimates for the latter regression model, it should not be estimated alone, but those factors affecting poverty status before SCTs ($y_1 = 1$) and the receipt of transfers ($y_2 = 1$) should be considered.

The three equations for our model may be written as follows:

$$\begin{aligned}
 y_{1i}^* &= \mathbf{x}'_{1i}\boldsymbol{\beta}_1 + \varepsilon_{1i} & y_{1i} &= 1 \text{ if } y_{1i}^* > 0, & y_{1i} &= 0 \text{ otherwise} \\
 y_{2i}^* &= \mathbf{x}'_{2i}\boldsymbol{\beta}_2 + \varepsilon_{2i} & y_{2i} &= 1 \text{ if } y_{2i}^* > 0, & y_{2i} &= 0 \text{ otherwise} \\
 y_{3i}^* &= \mathbf{x}'_{3i}\boldsymbol{\beta}_3 + \varepsilon_{3i} & y_{3i} &= 1 \text{ if } y_{3i}^* > 0, & y_{3i} &= 0 \text{ otherwise}
 \end{aligned}$$

with y_{3i} observed only if $y_{1i} = 1$ and $y_{2i} = 1$. The parameter \mathbf{x}'_{mi} is the vector of the explanatory variables for the i -th household in the m -th equation ($m = 1, 2, 3$), $\boldsymbol{\beta}_m$ is the vector of the regression coefficients in the m -th equation. For the residuals, $\boldsymbol{\varepsilon}_i \sim N(\mathbf{0}, \boldsymbol{\Omega})$, where $\boldsymbol{\varepsilon} = (\varepsilon_{1i}, \varepsilon_{2i}, \varepsilon_{3i})$. The terms on the main diagonal of $\boldsymbol{\Omega}$ are normalized to 1, such that the off-diagonal elements ρ_{mj} , $m, j = 1, 2, 3, m \neq j$ are correlations among the residuals.

If ρ_{13} and ρ_{23} are significantly different from zero, unobserved characteristics affecting the selection also affect the possibility of changing state, and the estimation of single equations can lead to serious sample selection bias. In other words, if the third equation is estimated on the basis of the set of poor households receiving SCTs alone, then inconsistent estimates will be obtained. If, on the contrary, we do not reject the null hypothesis that ρ_{13} and ρ_{23} are equal to zero, given the auxiliary variables included in the models, the third equation may be estimated independently from the other equations because the selection does not affect the probability of changing state from poor to non-poor, after controlling by covariates.

The likelihood function for the model may be expressed as follows. Define a set of sign variables $d_k = 2y_k - 1$ for $K \in \{1, 2, 3\}$. The likelihood contribution for a poor household before SCTs that receives SCTs ($y_1 = 1$ and $y_2 = 1$) is:

$$L_3 = \Phi_3(d_1\mathbf{x}'_1\boldsymbol{\beta}_1, d_2\mathbf{x}'_2\boldsymbol{\beta}_2, d_3\mathbf{x}'_3\boldsymbol{\beta}_3; d_1d_2\rho_{12}, d_1d_3\rho_{13}, d_2d_3\rho_{23})$$

where Φ_3 denotes the joint cumulative distribution of a trivariate normal distribution. In contrast, the likelihood contribution for the other households, those that were non-poor before SCTs or not receiving SCTs ($y_1 = 0$ and $y_2 = 0$; $y_1 = 0$ and $y_2 = 1$; $y_1 = 1$ and $y_2 = 0$), is:

$$L_2 = \Phi_2(d_1\mathbf{x}'_1\boldsymbol{\beta}_1, d_2\mathbf{x}'_2\boldsymbol{\beta}_2; d_1d_2\rho_{12}).$$

Therefore, the log-likelihood contribution to be calculated by the evaluator function for each observation is $(1 - y_1y_2) \log L_2 + y_1y_2 \log L_3$.

The parameter estimates and the correlation terms are obtained using maximum likelihood techniques. Specifically, we use a maximum simulated likelihood (MSL) estimation method that provides multivariate normal probabilities

by simulating likelihoods and then averaging over these. For further details on MSL estimation, see Greene (2008, sect. 17.5).

6. ESTIMATION RESULTS

Table 3 shows that the correlation between the first two equations' residuals is significant at the 5% level, while those calculated between the first and the third equations' residuals and between the second and the third equations' residuals are not. We also perform a formal Wald test to determine whether the double sample selection is ignorable based on the null hypothesis $\rho_{31} = \rho_{32} = 0$, which leads us to accept the null hypothesis with a p-value of 0.259. This result leads us to estimate a bivariate probit for the probability of being poor before receiving SCTs and for the probability of receiving SCTs (on the sample of 20,982 households) and an univariate probit, on the subsample of households poor before SCTs and receiving SCTs (2,018 households), for the probability of changing state.

As correlations between the residuals of the equations embody unobserved characteristics for the same households, the significance of the correlation between the first two equations' residuals and its positive sign may be interpreted from a behavioral perspective: unobserved household characteristics that favor poverty also favor receiving SCTs. Those unobserved characteristics could be connected to the social context and residence in certain sub-regional areas, such as administrative provinces and municipalities, where the poverty rate could be positively correlated with the provision of SCTs according to regional and local social policies and transfers. For example, there are some rent allowances devolved to households residing in municipalities with strong housing problems and having a very low household income.

Estimated coefficients and marginal effects are presented in two sub-sections. Section 6.1 analyzes the determinants of poverty before SCTs and the determinants of SCT receipt, thereby providing estimates of their marginal effects on the marginal probabilities and on the conditional probability of receiving SCTs given a household being poor. The probability of changing state from poor to non-poor because of SCTs is analyzed in Section 6.2.

6.1. Poverty and Social Transfers

Table 4 reports the results of the bivariate probit estimation for the outcomes *poverty status before SCTs* and *receipt of SCTs*. The household characteristics that

TABLE 3
RESULTS FOR EQUATIONS' RESIDUALS CORRELATIONS

| Coefficient | Estimate | S.E. | Z | p-value | 95% Confidence Interval | |
|-------------|----------|--------|-------|---------|-------------------------|-------|
| ρ_{21} | 0.236 | 0.0149 | 15.84 | 0.000 | 0.207 | 0.265 |
| ρ_{31} | -0.147 | 0.1176 | -1.25 | 0.211 | -0.377 | 0.083 |
| ρ_{32} | 0.157 | 0.1453 | 1.08 | 0.280 | -0.128 | 0.442 |

Source: Our estimates based on IT-SILC 2007 data.

TABLE 4
RESULTS FOR POVERTY STATUS PRE-SCTs AND RECEIPT OF SCTs

| Covariate | Poverty Before SCTs | | | SCTs Receipt | | |
|------------------------------|---------------------|--------|-------------------------------|--------------|--------|-------------------------------|
| | Estimate | Z | Marginal Effects ^a | Estimate | Z | Marginal Effects ^a |
| Gender | 0.0298 | 1.06 | 0.0074 | -0.2239*** | -9.00 | -0.743 |
| Age | -0.0108** | -2.08 | -0.0027 | 0.0124** | 2.50 | 0.0042 |
| Age ² | 0.0005 | 00.10 | 0.0001 | -0.0270*** | -5.69 | -0.0091 |
| Citizenship | 0.7623*** | 13.46 | 0.2474 | 0.0927* | 1.69 | 0.0322 |
| Illness | 0.0264 | 1.08 | 0.0066 | 0.2461*** | 11.12 | 0.0850 |
| Hours worked per week | -0.0043*** | -3.62 | -0.0011 | -0.0005 | -0.45 | -0.0002 |
| Years spent in a paid work | -0.0045*** | -4.06 | -0.0011 | -0.0031*** | -2.65 | -0.0011 |
| One person household | -0.0693 | -1.43 | -0.0169 | -0.9503*** | -23.71 | -0.2726 |
| 2 adults, both <65 years | -0.3232*** | -6.00 | -0.0704 | -0.4226*** | -10.54 | -0.1284 |
| 2 adults, at least one ≥65 | -0.3014*** | -5.56 | -0.0671 | -0.4432*** | -9.66 | -0.1355 |
| Others without children | -0.4471*** | -8.62 | -0.0940 | -0.0459 | -1.21 | -0.0154 |
| Single parent household | 0.4784*** | 6.32 | 0.1435 | 0.0752 | 1.19 | 0.0260 |
| 2 adults, 2 children | 0.3952*** | 7.99 | 0.1123 | 0.2570*** | 6.55 | 0.0917 |
| 2 adults, 3 or more children | 0.8465*** | 11.95 | 0.2807 | 0.5693*** | 8.78 | 0.2145 |
| Others with children | 0.1591*** | 2.80 | 0.0421 | 0.2543*** | 5.55 | 0.0911 |
| Lower sec. school | -0.3451*** | -10.93 | -0.0805 | -0.1365*** | -4.40 | -0.0456 |
| Upper sec. school | -0.7670*** | -21.53 | -0.1606 | -0.3857*** | -11.67 | -0.1239 |
| University degree | -1.2931*** | -23.47 | -0.1863 | -0.5804*** | -14.08 | -0.1680 |
| Employee, temporary work | 0.7058*** | 13.12 | 0.2250 | 0.4156*** | 8.49 | 0.1534 |
| Self-employed | 0.5272*** | 14.01 | 0.1533 | -0.6164*** | -19.67 | -0.1792 |
| Co.co.co. | 0.6961*** | 5.31 | 0.2246 | -0.1682 | -1.52 | -0.0542 |
| Unemployed | 2.007*** | 21.66 | 0.6843 | -0.0583 | -0.77 | -0.0195 |
| Retired | 0.7827*** | 13.12 | 0.2251 | -0.1922*** | -3.74 | -0.0635 |
| Other inactive | 1.1670*** | 19.92 | 0.3843 | 0.1425*** | 2.73 | 0.0497 |
| Piemonte | -0.3328*** | -5.48 | -0.0710 | -0.1721*** | -3.17 | -0.0557 |
| Valle d'Aosta | -0.3719*** | -3.86 | -0.0763 | 0.0184 | 0.22 | 0.0063 |
| Lombardia | -0.3708*** | -6.76 | -0.0789 | -0.1826*** | -3.75 | -0.0592 |
| Trentino-Alto Adige | -0.4978*** | -6.78 | -0.0966 | 0.0780 | 1.28 | 0.0270 |
| Veneto | -0.3327*** | -5.68 | -0.0713 | -0.1140** | -2.22 | -0.0376 |
| Friuli-Venezia Giulia | -0.3264*** | -4.71 | -0.0692 | -0.0315 | -0.052 | -0.0106 |
| Liguria | -0.1455** | -2.23 | -0.0337 | -0.0526 | -0.86 | -0.0176 |
| Emilia-Romagna | -0.4838*** | -7.96 | -0.0965 | -0.0499 | -0.96 | -0.0167 |
| Toscana | -0.3929*** | -6.45 | -0.0816 | -0.0786 | -1.49 | -0.0261 |
| Umbria | -0.2271*** | -3.46 | -0.0506 | -0.0207 | -0.35 | -0.0070 |
| Marche | -0.2913*** | -4.48 | -0.0630 | 0.0576 | 1.01 | 0.0198 |
| Abruzzo | 0.1259* | 1.66 | 0.0330 | 0.0414 | 0.57 | 0.0142 |
| Molise | 0.3547*** | 4.51 | 0.1021 | 0.1005 | 1.30 | 0.0350 |
| Campania | 0.4308*** | 7.67 | 0.1257 | 0.1443*** | 2.72 | 0.0506 |
| Puglia | 0.3240*** | 5.48 | 0.0915 | 0.1811*** | 3.19 | 0.0640 |
| Basilicata | 0.3531*** | 4.73 | 0.1015 | 0.2331*** | 3.24 | 0.0836 |
| Calabria | 0.4361*** | 6.28 | 0.1289 | 0.2458*** | 3.66 | 0.0883 |
| Sicilia | 0.5725*** | 9.78 | 0.1752 | 0.2305*** | 4.11 | 0.0823 |
| Sardegna | 0.1251* | 1.73 | 0.0328 | 0.1454** | 2.16 | 0.0511 |
| Constant | -0.1010 | -0.66 | | 0.3232** | 2.37 | |

Notes: n = 20,982, Wald $\chi^2(86) = 80110.31$, Prob > $\chi^2 = 00.0000$.

*** 1% significance, ** 5% significance, * 10% significance.

^a Marginal effects calculated at the regressors' mean values for continuous variables and for a discrete change from 0 to 1 for dummy variables.

Source: Our estimates based on IT-SILC 2007 data.

are more correlated with the probability of being poor before SCTs are household type, region of residence, and some characteristics of the head of the household.

Household types more exposed to the risk of poverty are those with dependant children, in particular single parent households and large households with three or more children. In this respect, Del Boca (2011) observes that the risk of poverty among the latter group of households in Italy is much higher than the EU average, and this may be explained by the relatively limited job opportunities for women with children in Italy and the lower availability of childcare for young children that would discourage job searching by mothers, thus reducing family income.

The well-known North–South divide that characterizes the Italian economy explains most of the regional differences observed. The gap between the southern regions and the rest of the country in terms of economic development and poverty is well known, and the debate on the reasons why it has not narrowed in recent decades, despite the substantial financial resources assigned through the European Structural Funds and national co-financing, is highly active (D’Antonio and Scarlato, 2008). Moreover, as expected, the probability of being poor declines when the following characteristics of the head of the household increase: educational level, hours worked per week, and years spent in paid work. These results are in line with those obtained in other studies (Wolff, 2009; Del Boca, 2011).

We note that the determinants of the probability of being poor before transfers and those of receiving SCTs are not always consistent. Households with single parent adults and dependant children experience a significantly higher probability of being poor with respect to the reference category but a much smaller (and non-significant) probability of receiving SCTs. As previously discussed, Italy failed to introduce or adequately supply instruments explicitly targeted to women, the young and single parents that emerged as weak segments of the population in recent years in many European countries.

The probability of one person households being poor is not significantly different from the reference category (two adults and one dependant child), but the former category has a much lower probability of receiving SCTs. Single individuals are excluded from family and children related transfers. In the case of the elderly, old age pensions are characterized by wide coverage and relatively high amounts (moreover, supplementation to meet the minimum level is not separately recorded in our dataset); additionally, this household type is unlikely to receive disability benefits, as disabled people do not typically live alone.

For the households with dependant children, the probability of being poor is higher (in terms of the marginal effect) than that of receiving transfers. This is a consequence of a system of transfers that is primarily assigned on an individual basis, with family and children related allowances (namely the family allowance, “assegno al nucleo familiare”) that are relatively under-financed and limited to employees and retirees. Although this is not the focus of this paper, we note that tax concessions and allowances that represent nearly half of the public support provided to households with children is also not generous (see Figari *et al.*, 2011), a situation that contributes to the very low fertility rates experienced by the country in recent decades (see Billari, 2008).

Households residing in certain administrative regions, such as Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia, Emilia-Romagna (located in the North of the country), Tuscany, and Marche (Centre), are characterized by significantly lower probabilities of being poor than those residing in Lazio, but they are not significantly less likely to receive SCTs. The cases of Valle d'Aosta and Trentino-Alto Adige are peculiar: they are special statute regions that enjoy more generous funding for social expenditures from the national government. In particular, for Trentino-Alto Adige, if we remove "social pensions" from SCTs, we find that households in this region are significantly more likely to receive SCTs than those residing in the rest of the country. Trentino-Alto Adige is the administrative region with the highest per capita expenditures targeted at combating poverty (Bezze and Vecchiato, 2009). From our data, we observe that households in this region benefit, on average, from the highest amount of "housing allowances," some of the highest amounts of "education related allowances," and levels of "family/children related allowances" comparable to those of the poorer southern regions. In the model for SCTs, this effect is attenuated by the inclusion of social pensions, which instead result in a particularly low average for this region where poor senior citizens are relatively rare. Households with a member suffering from a disability or chronic illness have a significantly higher probability of receiving transfers, even if this condition is not a significant determinant of poverty. This finding is in line with the limited or lack of means testing in disability benefits. The attendance allowance ("indennità di accompagnamento" in Italian) is not means tested. Benefits paid to disabled citizens are based on a contributory system if they are workers or retirees. In this case, the amount of the benefit ("pensione di invalidità") depends on the contributory history; supplementation to reach a fixed minimum level in the case of low past contributions is means tested sequentially on personal and household income (the latter being considered only if the former exceeds a given threshold). Benefits paid to disabled citizens without a contributory history ("pensione di inabilità per invalidi civili") are means tested using personal income. When the disabled citizen reaches the age of 65, the disability benefit is converted into a welfare benefit ("assegno sociale") that is means tested on the basis of the income of the person in question and his spouse if he is married.

If the head of the household is female, the probability of receiving SCTs is lower than if the head of the household is male, but the gender of the head is not a significant determinant of poverty. In this respect, we observe that a high percentage of female heads of households (33 percent) are retired one person households or one person households in the category "other inactive," and therefore they do not receive certain benefits such as "family/children related allowances" and "unemployment benefits." The corresponding percentage for male heads is only 5 percent.

Households with a self-employed head experience a higher probability of being poor than those having a head that is employed in permanent work, but a lower probability of receiving SCTs. Under-reporting of income may play a role in explaining these striking figures (see Di Marco, 2007); moreover, the self-employed are beyond the scope of most social transfers programs (such as unemployment benefits, family and children related allowances). Households with self-employed under a temporary contract ("co.co.co" and "co.co.pro") head appear to receive

assistance from SCTs, and this is also the case for those with a head that is employed in permanent work, while they also experience a higher probability of being poor. Co.co.co. and co.co.pro. workers represent an intermediate category between employees and the self-employed because they work independently without being subordinate, but their activity is coordinated by the employer on the basis of business requirements. We note that these self-employed individuals under temporary contracts receive larger family allowances than the other self-employed individuals and are eligible for unemployment benefits. This can be explained by the fact that self-employed individuals under temporary contracts are entitled to family allowances for dependant family members (while only some categories of the remaining self-employed receive them). Moreover they can receive unemployment benefits if they experience periods of unemployment. Nonetheless it should be emphasized that the requirements needed to receive unemployment benefits disfavor them with respect to regular permanent workers. Moreover most of self-employment temporary workers do not even reach the sustainability level to form their own family to be caught in the analysis carried out in this paper on the effect of social transfers on poverty reduction. For a thorough discussion of these topics, see Berton *et al.* (2012).

The probability of being poor differs from the reference category (households whose head is employed with a permanent work) to the greatest extent when the head of the family is unemployed (+68 percent), while the probability of receiving SCTs is not significantly higher for these households. This highlights the limited scope of unemployment benefits: only employees with past contributions are eligible (i.e., they must have made at least 52 weeks of contributions in the two years before becoming unemployed); moreover, in the year considered in this study, benefits can only be received for six months (nine for unemployed individuals aged 50 or over). In this respect, it should be noted that workers whose wages are supplemented, as discussed in Section 2.2, are classified as employed in the IT-SILC survey. However, a very few heads of households experience this peculiar condition in the sample, only 24, and most of them receive the supplement for a few months (half of them for only two months), thus making it impossible to obtain information about the effect of the wage supplementation fund scheme.

To better understand the effects of the determinants of the receipt of SCTs across poor households, we calculate the marginal effects estimated for the conditional probability that a household receives SCTs given that it is poor (Table 5) and compare them with the marginal probability of receiving SCTs discussed previously. We find that these two types of effects differ somewhat, as being poor does not increase the probability of receiving SCTs for all the households groups. The most relevant differences are connected to household type, the labor market status of the head of the household, and the region of residence.

One person households experience a 27 percent lower probability of receiving SCTs than households composed of “two adults, one dependant child,” and this difference increases to 34 percent if they are poor. On the contrary, “two adults, three or more dependant children” households have a 21 percent higher probability of receiving SCTs than households composed of “two adults, one dependant child,” and this difference declines to 17 percent if they are poor. This means that large households below the poverty line are more likely to be outside the scope of

TABLE 5
MARGINAL EFFECTS^a (dY/dX), REFERRED TO PR(SCTs=1|POVERTY PRE-SCTs=1)

| Covariate | Marginal Effects | Z | Covariate | Marginal Effects | Z |
|------------------------------|------------------|--------|----------------|------------------|-------|
| Gender | -0.0905*** | -9.32 | Retired | -0.1304*** | -6.57 |
| Age | 0.0057*** | 2.20 | Other inactive | -0.0238 | -1.13 |
| Age ² | -0.0108*** | -5.73 | Piemonte | -0.0425** | -2.01 |
| Citizenship | -0.0167 | -0.77 | Valle d'Aosta | 0.0364 | 1.09 |
| Illness | 0.0966*** | 10.88 | Lombardia | -0.0438** | -2.30 |
| Hours worked per week | 0.0001 | 0.36 | Trentino-A.A. | 0.0708*** | 2.80 |
| Years spent in a paid work | -0.0009* | -1.93 | Veneto | -0.0198 | -0.97 |
| One person household | -0.3363*** | -26.70 | Friuli-V.G. | 0.0126 | 0.51 |
| 2 adults, both <65 years | -0.1373*** | -9.50 | Liguria | -0.0099 | -0.41 |
| 2 adults, at least one ≥65 | -0.1470*** | -8.91 | Emilia-Romagna | 0.0178 | 0.84 |
| Others without children | 0.0162 | 1.05 | Toscana | -0.0010 | -0.05 |
| Single parent household | -0.0047 | -0.19 | Umbria | 0.0092 | 0.39 |
| 2 adults, 2 children | 0.0742*** | 4.64 | Marche | 0.0458** | 1.97 |
| 2 adults, 3 or more children | 0.1699*** | 6.55 | Abruzzo | 0.0071 | 0.25 |
| Others with children | 0.0908*** | 4.87 | Molise | 0.0141 | 0.46 |
| Lower sec. school | -0.0281** | -2.28 | Campania | 0.0262 | 1.23 |
| Upper sec. school | -0.0934*** | -7.16 | Puglia | 0.0488** | 2.13 |
| University degree | -0.1235*** | -7.75 | Basilicata | 0.0679** | 2.32 |
| Employee, temporary work | 0.1171*** | 5.86 | Calabria | 0.0670** | 2.46 |
| Self-employed | -0.2553*** | -23.67 | Sicilia | 0.0510** | 2.24 |
| Co.co.co. | -0.1108*** | -2.79 | Sardegna | 0.0491* | 1.81 |
| Unemployed | -0.1311*** | -4.85 | | | |

Notes: *** 1% significance, ** 5% significance, * 10% significance.

^a Marginal effects calculated at the regressors' mean values for continuous variables and for a discrete change from 0 to 1 for dummy variables.

Source: Our estimates based on IT-SILC 2007 data.

social transfers, as in the case when household members are long term unemployed, self-employed, or fixed term contract workers. The effect observed for singles is likely to reflect the effect of the missing information on the supplements provided to ensure the minimum income level is maintained for the elderly poor.

Regarding the labor market status of the head of the family, we find that a household with a head that is “self-employed,” “unemployed,” or “retired” is 18, 2, and 6 percent, respectively, less likely to receive SCTs than a household with a head that is an “employee with permanent work.” The differences in the probabilities of receiving SCTs are more relevant if we focus on the poor, which are -26, -13, and -13 percent, respectively. This result again highlights the tendency of the Italian SCT system to over-protect people with permanent positions relative to the other categories of workers.

Receiving SCTs becomes more likely when conditioning on the poverty status for those households where the head is a graduate (the difference in the probability of receiving SCTs when the head has an elementary school education declines from -17 to -12 percent); this finding may be explained by the increase in the probability of the effective take-up of transfers associated with education and ability to cope with bureaucratic procedures. As anticipated in the introduction, we unfortunately do not have circumstantial evidence regarding non take-up in Italy (see Hernanz *et al.*, 2004). A similar pattern is observed for households residing in the

Trentino-Alto Adige region (the difference with Lazio region increases from 3 to 7 percent when conditioning on the poverty status), an effect of the more effective anti-poverty policies implemented by this regional government.

We also estimate the marginal effects for the conditional probability that a household receives SCTs provided that it is not poor, without finding significant differences in the marginal effects obtained for the marginal probability reported in Table 4. This lack of differences is likely because non-poor households represent a large majority (76 percent) of the overall sample.

6.2. *Change of State after Social Transfers*

The third probit equation is independently estimated in the sub-sample of those households who are poor before SCTs and receive SCTs (the sub-sample size is 2,018); it models the probability of changing state, from poverty to non-poverty, after SCTs. As anticipated in Section 3, additional covariates are included, namely, the seven dummy variables for the types of SCTs received and the poverty gap. The indicator variable for a person being disabled is excluded because of its possible collinearity with the receipt of a disability benefit.

Estimation results are displayed in Table 6. The probability of moving out of poverty because of SCTs depends on the poverty gap and whether the most generous types of SCTs are received. The poverty gap has a negative effect on the probability of changing state: if it increases by 1 percent, the probability of exiting poverty decreases by 1.5 percent. Regarding SCTs, we note that the ranking of SCT-related marginal effects is largely consistent with those of the mean and median amounts reported in Table 2. The amounts of housing-related and family/children-related allowances received by the poor are not sufficient to escape poverty. In particular, the family/children-related allowances that are, as previously discussed, the most common transfers (27 percent of households received them) are not sufficiently generous to have a significant effect, on average, on the probability of changing state. We note that the family allowance, by far the most relevant transfer in this category, is limited in scope, as only employees, retirees, a subset of self-employed workers (co.co.co and co.co.pro.) and unemployed individuals receiving unemployment benefits are entitled to this type of transfer. Poor households, the members of which are often at the margins of the labor market, may not be covered, or be only partially covered, by this benefit. Although much more selective, the most effective SCTs are “disability benefits” and “social pensions,” the receipt of which increases the probability of changing state by 55 and 52 percent, respectively.

Poor households residing in Valle d’Aosta and Trentino-Alto Adige have higher probabilities of exiting poverty after the receipt of transfers. Both of these regions are small, mountainous border regions hosting linguistic minorities, enjoying substantial political autonomy, and are characterized by more generous social spending policies. We have already discussed the primacy of Trentino-Alto Adige in terms of per-capita spending targeting poverty. Regarding Valle d’Aosta, Bezze and Vecchiato (2009) observe that its per-capita spending targeting poverty, which consists of both monetary transfers and spending on services, is not particularly high compared to that of other regions such as Trentino-Alto Adige. Nevertheless,

TABLE 6
RESULTS FOR POVERTY POST-SCTs FOR THOSE POOR HOUSEHOLDS RECEIVING SCTs

| Covariate | Estimate | Z | Marginal Effects ^a |
|---|------------|--------|-------------------------------|
| Gender | -0.2717*** | -2.60 | -0.0892 |
| Age | 0.0245 | 1.35 | 0.0083 |
| Age ² | -0.0391** | -2.16 | -0.0133 |
| Citizenship | -0.1614 | -1.02 | -0.0528 |
| Hours worked per week | -0.0028 | -0.81 | -0.0009 |
| Years spent in a paid work | 0.0013 | 0.32 | 0.0004 |
| One person household | 1.0770*** | 5.61 | 0.4052 |
| 2 adults, both <65 years | 0.3588* | 1.86 | 0.1312 |
| 2 adults, at least one ≥65 | -0.0839 | -0.43 | -0.0282 |
| Others without children | -0.1832 | -1.10 | -0.0599 |
| Single parent household | 0.1934 | 0.89 | 0.0690 |
| 2 adults, 2 children | -0.0004 | -0.00 | -0.0001 |
| 2 adults, 3 or more children | -0.1211 | -0.70 | -0.0401 |
| Others with children | -0.4162** | -2.58 | -0.1277 |
| Lower secondary school | 0.1131 | 1.11 | 0.0388 |
| Upper secondary school | 0.2009* | 1.68 | 0.0708 |
| University degree | 0.1377 | 0.54 | 0.0486 |
| Employee, temporary work | -0.0139 | -0.10 | -0.0047 |
| Self-employed | -0.2915** | -2.00 | -0.0923 |
| Co.co.co | 0.6320 | 1.08 | 0.2409 |
| Unemployed | 0.3668* | 1.83 | 0.1344 |
| Retired | 0.1932 | 1.00 | 0.0680 |
| Other inactive | 0.7205*** | 4.09 | 0.2620 |
| Piemonte | 0.4378* | 1.85 | 0.1629 |
| Valle d'Aosta | 0.8007** | 2.03 | 0.3071 |
| Lombardia | -0.1754 | -0.80 | -0.0570 |
| Trentino-Alto Adige | 0.8018** | 2.49 | 0.3072 |
| Veneto | 0.0936 | 0.40 | 0.0327 |
| Friuli-Venezia Giulia | 0.1181 | 0.46 | 0.0415 |
| Liguria | 0.1490 | 0.57 | 0.0527 |
| Emilia-Romagna | 0.1042 | 0.44 | 0.0365 |
| Toscana | 0.3410 | 1.46 | 0.1250 |
| Umbria | 0.1440 | 0.61 | 0.0509 |
| Marche | 0.1545 | 0.67 | 0.0547 |
| Abruzzo | 0.1061 | 0.43 | 0.0372 |
| Molise | -0.0093 | -0.04 | -0.0032 |
| Campania | -0.0838 | -0.48 | -0.0281 |
| Puglia | -0.2566 | -1.41 | -0.0822 |
| Basilicata | -0.0607 | -0.27 | -0.0204 |
| Calabria | 0.1025 | 0.52 | 0.0358 |
| Sicilia | -0.3440** | -1.91 | -0.1083 |
| Sardegna | 0.2201 | 0.99 | 0.0789 |
| “Family/children related allowances” (0/1) | 0.0778 | 0.82 | 0.0264 |
| “Social exclusion not elsewhere classified” (0/1) | 0.6703*** | 3.17 | 0.2549 |
| “Housing allowances” (0/1) | -0.0058 | -0.03 | -0.0020 |
| “Unemployment benefits” (0/1) | 0.5425*** | 5.86 | 0.1914 |
| “Disability benefits” (0/1) | 1.5364*** | 13.33 | 0.5488 |
| “Education related allowances” (0/1) | 0.5229** | 2.39 | 0.1967 |
| “Social pensions” (0/1) | 1.4055*** | 9.34 | 0.5161 |
| GAP(%) | -0.0452*** | -22.43 | -0.0154 |
| Constant | -0.0840 | -0.17 | |

Notes: n = 2,018, LR $\chi^2(49) = 1005.66$, prob > $\chi^2 = 0.0000$.

*** 1% significance ** 5% significance, * 10% significance.

^a Marginal effects calculated at the regressors' mean values for continuous variables and for a discrete change from 0 to 1 for dummy variables.

Source: Our estimates based on IT-SILC 2007 data.

Valle d'Aosta is the Italian region with the highest percentage of monetary transfers (97 percent) as a percentage of total regional social spending. Another interesting result concerns another special statute region, Sicilia, which, while it enjoys a great deal of political autonomy and additional funding (similar to Trentino-Alto Adige, Valle d'Aosta, Friuli-Venezia Giulia, and Sardegna), exhibits the lowest probability of changing state after SCTs, the only probability significantly lower than that of Lazio. SCTs appear particularly ineffective for this region, which seems to lack the institutional ability to make effective use of its resources. This result confirms the findings of D'Antonio and Scarlato (2008), who classify Sicilia among failing developing regions with "fragile" local institutions.

Other variables contribute to determining the probability of changing state, such as household type and the gender, age, educational level, and labor condition of the head of the household. The significantly positive coefficient associated with "one-person households" and the significantly negative one for "other households with dependant children" are because SCTs tend, in equalized income terms, to be less generous for large households and ultimately because they are allocated on an individual basis in most cases and not to households. Note that "other households with dependant children" is a relevant household type, given the relatively restrictive definition of dependant children and related household types that do not allow other non-dependant persons other than the two adults.

Moreover, if the head of the household is female, the probability of changing state declines by approximately 9 percent. We have observed that if the head is female, the household is less likely to receive SCTs and if it receives them, their amounts are lower. Moreover, the probability of leaving poverty decreases with the age of the head of the household. It is known that the very old and elderly women tend to be particularly poor (Wolff, 2009), and hence the effect of SCTs on their poverty status is weak. A reduction in the probability of take-up as the head of the household ages is also a plausible explanation. As noted in the introduction, we unfortunately do not have circumstanced empirical evidence on non-take-up in Italy (see Hernanz *et al.*, 2004).

Regarding labor market status, we note that the "other inactive person" category that represents a very heterogeneous group of people is in a more favored situation. This is consistent with the results obtained in the previous section, where we noted that if the head of the family belongs to this category, the household exhibits a higher probability of being poor than if he is an employee with a permanent job and has a significantly higher probability of receiving SCTs. Households headed by inactive individuals tend to be targeted by programs aimed at addressing social exclusion that are implemented by certain regional and local governments.

7. CONCLUSIONS

In parallel with the aim of the paper, the conclusions of our discussion are twofold. First, we illustrated that the proposed methodology, based on the specification of a trivariate probit model, is able to highlight the specificities and structural limitations of a system of (cash) social transfers with respect to its effects

on poverty reduction. The method may then be considered for other applications, especially for the analysis of the social transfer systems of countries for which the EU-SILC survey data that we analyzed are available.

Second, this article contributes to the debate on the effectiveness of the Italian social transfers system by highlighting not only its limited efficacy in fighting poverty, as was done in the previous literature, but also by exploring which groups in the population are more likely to be left behind by national social policy. The Italian social system is poorly funded, fragmented, inefficiently means tested, and biased toward the protection of employees with regular contracts and the elderly. We showed that households with children (especially those with single parents or many children) or that have self-employed, fixed term workers or an unemployed head face the worst outcomes.

Several hypotheses may be formulated to explain this situation. First, the system of social transfers suffers from a chronic lack of policy coordination. Second, the various types of transfers are also provided without reference to a clear and shared agenda for combating poverty. Because the transfers provide assistance in a general manner, it is unclear whether they are intended to reduce insecurity with respect to income loss or extraordinary spending or if they aim to decrease poverty. Third, transfers are generally assigned based on the professional and demographic characteristics of individuals. However, because poverty acts at the household level, the transfers do not necessarily reach poor households. Combating poverty in Italy has traditionally been conducted on a short-term basis, without due attention being paid to strategic and long-term programs.

There are no signs that this tendency is being reversed. The idea of a minimum income (in the various forms of Guaranteed Minimum Income, Participation Basic Income, and Universal Basic Income) disappeared from parliamentary debate in 2003 and never reappeared on the social protection agenda. Only three EU countries do not adopt a minimum income scheme, guaranteed for all of the poor: Italy, Greece, and Hungary. The results of a comparative simulation study regarding the fiscal effect of basic income policies (Colombino *et al.*, 2010) indicate that “Italy appears to be the country the most amenable to a reform, in the sense that any type of basic income reform would improve on the current status.”

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