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# Child vulnerability in Albania: intra-household inequality, parental migration and public policies

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# Preface

Plato (IV century b.c.) recognised the public relevance of children's welfare in the book VII of "The Laws", stating:

> *"...there shall be compulsory education, as the saying is, of all and sundry, as far as this is possible; and the pupils shall be regarded as belonging to the state rather than to their parents.."*

The present study considers how a government concerned with the welfare of its children can measure it while taking into account that children live in families. The household is the primary collective to which a child belongs, and a government should know the household's behaviour to design policies supporting single members of this collective. The thesis proposes to econometrically evaluate various aspects of children's welfare in Albania and how they are affected by public policies. The idea is to analyse the welfare of children (both in monetary terms and with more comprehensive indicators of wellbeing), taking into account the intra-household distribution of resources and decision making. The work is organised as follows.

Chapter I outlines the theoretical backgrounds of the analyses and includes a brief overview of Albania's economy and its peculiarities, the condition of households and children in the country and the weak policy measures supporting poor families and children. Chapter II presents an assessment of the only anti-poverty program implemented in Albania. Its capacity to reach families who are effectively in need (targeting evaluation) and its impact on family welfare (treatment effects) are estimated.

The unitary framework is dropped in Chapter III, which explores child welfare proposing and estimating a structural model of household collective consumption. The analysis focusses on children aged under five, for whom the consumption sharing rule can be consistently estimated. After having assessed individual welfare and poverty incidence for this cohort through a collective demand system, the chapter shows how cash and in-kind transfers influence child welfare in Albania using non-parametric techniques.

Finally, Chapter IV investigates the long-term effects of parental migration abroad on the welfare of children left behind in Albania. Although parent migration usually benefits children economically, the lack of parental care can cause relational and psychological problems that may affect children's welfare in the long term through a negative effect on their educational attainment. The phenomenon of children left behind - mainly by fathers - is particularly significant in Albania, where migration has represented the only viable way of coping with increasing poverty and the absence of public resources sustaining household income. The work takes advantage of retrospective information on migration, which enables the reconstruction of the "left behind" episodes of children in their parents' migration history.

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# Chapter 1

# Introduction

This introductory chapter has two goals. The first is to introduce the issue of measurement of child welfare. The second is to provide a general description of the country that will be analysed in the three essays of the thesis, Albania.

When dealing with child welfare, the problem of the inadequacy of the standard analytical tools for studying intra-household inequality has to be faced. Perhaps the most appealing framework to deal with these aspects is that of collective models. This framework permits to focus on individual welfare of households' members, taking into account the allocation of resources within the family, improving the potentiality of poverty and inequality analyses, as well as the evaluation of the impact of public policies on child welfare. The first part of this chapter deals with these issues, as they represent the theoretical background of the three essays presented in the rest of the study.

The last part of this chapter gives a general description of this not-often-studied country, Albania, with a special attention to the evolution of the role of the family and the condition of vulnerable members during the years of the transition to a market economy. The description of Albanian households with respect to poverty, inequality and public policies, offers a reference framework to the analysis of child welfare.

## 1.1 Measuring the welfare of children

This section introduces the theoretical backgrounds of the essays presented in the next three chapters of the thesis. Section 1.1.1 presents the theoretical foundations

for the program evaluation performed in Chapter II, Section 1.1.2 introduces the collective household framework developed in Chapter III and Section 1.1.3 presents the theory supporting school attendance models estimated in Chapter IV.

### 1.1.1 The measurement of welfare

It is common practice in the evaluation of household welfare to start with the identification of a single monetary indicator of welfare, a money-metric measure of the living standards of individuals. This indicator is generally identified with total household expenditure on consumption or income. This measure finds its foundation in consumption theory (Deaton and Muellbauer, 1980a), where agents maximise a utility function subject to a budget constraint,

$$\max u(\mathbf{x}) \quad s.t. \quad \mathbf{p}'\mathbf{x} = y, \tag{1.1}$$

which determines the optimal consumption choices of the individuals, $\mathbf{x}_i^*(\mathbf{p}, y)$. In this programme, $\mathbf{x}$ is a vector of consumed goods, $u(\mathbf{x})$ is the utility function representing consumption preferences, $\mathbf{p}$ is the vector of prices of goods $\mathbf{x}$, and $y$ is total expenditure. $\mathbf{x}^*(\mathbf{p}, y)$ is the demand function obtained by the maximisation of programme (1.1) and depends upon prices and total expenditure. According to this approach, the natural measure of welfare would be the utility function evaluated at the chosen consumption bundle $V(\mathbf{p}, y) = u(\mathbf{x}^*(\mathbf{p}, y))$, which is also known as the indirect utility function. However, it can be proved that the expenditure function $e(\mathbf{p}, U)$, which determines the minimum possible expenditure to attain the utility level $U$, can be used as well, as it comes from the dual consumer problem $(\min \mathbf{p}'\mathbf{x} \ s.t. \ u(\mathbf{x}) = U)$. Indeed, given a price vector $\mathbf{p}$, the expenditure function works as a representation of preferences, as it monotonically increases with utility $U$ (Diewert, 1974). Considering that for any consumption bundle $\mathbf{x}$ the utility of consumer is $u(\mathbf{x})$, the corresponding value of the expenditure function is

$$e(\mathbf{p}, u(\mathbf{x})) = m(\mathbf{p}, \mathbf{x}), \tag{1.2}$$

where $m(\mathbf{p}, \mathbf{x})$ is called the *money-metric utility* of $\mathbf{x}$, given prices $\mathbf{p}$ (Samuelson, 1974) and represents the minimum expenditure to reach the utility level attained at $\mathbf{x}$. Considering that each observed bundle in the real data should be the result of a

maximisation problem, the utility function equals the indirect utility:

$$u(\mathbf{x}) = u(\mathbf{x}^*(\mathbf{p}, y)) = V(\mathbf{p}, y), \tag{1.3}$$

and it is possible to define an alternative money-metric measure of welfare as

$$e(\mathbf{p}^r, V(\mathbf{p}, y)) = \mu(\mathbf{p}^r; \mathbf{p}, y), \tag{1.4}$$

which is called the *indirect money-metric utility* or *equivalent income* (King, 1983). This is the minimum expenditure sufficient to reach utility $V(\mathbf{p}, y)$ given a vector of reference prices $\mathbf{p}^r$. When the reference prices $\mathbf{p}^r$ is equal to the observed prices $\mathbf{p}$, then $\mu(\mathbf{p}; \mathbf{p}, y) = y$, implying that total expenditure in consumption is a proper measure of welfare, assuming that observed consumption choices are optimal in the sense that they maximise consumer's utility.

This framework is widely used to perform public policies evaluations. For example, if a reform applies a reduction of income tax rates, total expenditure in consumption will reflect this change increasing from $y$ to $y^1$, and the welfare increase due to the reform can be measured simply as $y^1 - y$ or, in relative terms, as $(y^1 - y)/y$ (assuming that prices are unchanged). An alternative policy reform may affect value-added tax rates, increasing prices from $\mathbf{p}$ to $\mathbf{p}^1$. Such a reform can be evaluated by means of the *Equivalent Variation* (EV) welfare measure, i.e.,

$$EV = \mu(\mathbf{p}; \mathbf{p}^1, y) - y, \tag{1.5}$$

where the first term of the equation is the equivalent income computed at the new price levels $\mathbf{p}^1$, assuming that total expenditure remains unchanged. Clearly, a policy reform could simultaneously change total expenditure and prices, such that

$$EV = \mu(\mathbf{p}; \mathbf{p}^1, y^1) - y. \tag{1.6}$$

Alternative measures of welfare variations can be constructed by choosing a different reference price vector (if the reference vector is the post reform $\mathbf{p}^1$ the measure is called *compensating variation*) or by using an alternative welfare measure as the money-metric utility $m(\mathbf{p}, \mathbf{x})$, useful when the public intervention directly affects consumed quantities of some goods.

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In order to use the presented framework for poverty and inequality analysis, a further assumption is needed. Consumption data are always collected at the household level. Hence, it is necessary to assume that within the family resources are optimally allocated according to the needs of its members. In this way, consumer theory, which is developed to explain the behaviour of an individual, can be applied to household consumption, as the marginal effect of income and prices changes will be the same for all household members. However, households are not identical and several factors can influence the welfare of its members. For instance, the most-studied factors are family composition and household size. Given a certain consumption level, individuals belonging to larger families will have a smaller welfare level with respect to small households, even if this effect can be reduced by household economies of scale. To solve this problem, a common practice consists in computing per capita or equivalent consumption, such that the welfare measure becomes comparable across households of different sizes.

In Chapter II, this analytical framework is used to measure the impact of an anti-poverty programme on household welfare and poverty in Albania. However, this approach may not be fully satisfactory if the aim of the analysis is child welfare, as shown in the next sub-section. Let us see why.

### 1.1.2 Why the standard approach cannot be applied to children?

In the household model of Becker (1974, 1981), the unitary and altruistic nature of the family implies that even if there is a change in individual variables, there may not be a change in household consumption patterns and the distribution of resources. Becker has attempted to reconcile the single-utility (or unitary) framework with the collective nature of the family by introducing the "rotten kid" theorem, stating that family members, even if they are selfish, will act to help one another if their financial incentives are properly linked. Later, Sen (1983) has introduced the issue of gender inequality within the household, suggesting that resources may not be equally distributed according to members' needs. Following Sen's concern, during the 80s there has been an increasing attention on the issue of intra-household inequality (Behrman, 1988; Sen, 1988; Haddad and Kanbur, 1990; Harriss, 1990; Thomas, 1990; Behrman, 1992). This effort has culminated with the seminal works of Chiappori (1988, 1992), which, introducing the collective household models, started

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a new stream of research on intra-household resource allocation. In these models, household's choices are grounded on individual preferences for each member - more frequently, the adults - and the family's choices are regarded as the result of a decision process, which may involve bargaining among the members. The main assumption of this approach is that household decisions are Pareto efficient, in the sense that, for a given choice, it is not possible to increase one member's welfare without reducing that of the others. Later, the results of Browning et al. (1994) opened the way for welfare comparisons of households with different composition using expenditure data and, hence, welfare comparisons with individual-based rather than family-based welfare measures. They show that maximising the household problem

$$\max U^a(\mathbf{x}^a) + \rho U^b(\mathbf{x}^b) \quad s.t. \quad \mathbf{p}'(\mathbf{x}^a + \mathbf{x}^b) = y, \tag{1.7}$$

where $\rho$ represents the relative weight of member $b$, is equivalent to separately max-imise individual utilities

$$\max U^k(\mathbf{x}^k) \quad s.t. \quad \mathbf{p}^k\mathbf{x}^k = \phi_k \quad for \quad k = a, b; \quad \phi_a + \phi_b = y, \tag{1.8}$$

where $x^k$ is the vector of goods consumed by member $k$, and $\phi_k$ represents the amount of resources assigned to member $k$, which, referring to Becker (1981), is commonly called the "sharing rule".

Browning et al. (1994) test their approach to a sample of couples without children, while Bourguignon (1999) theoretically extends the approach considering a more complex demographic composition of the family. The preference structure proposed by Browning et al. (1994) is of "caring preferences" (each person cares about the other's welfare and the collective setting imply that however allocation decisions are made, they lead to efficient outcomes), but as shown in Bourguignon (1999), the set of Pareto-optimal solutions found with caring preferences is included among those obtained with egoistic preferences. Moreover, "caring parameters"[1] are in general not identified, and in several empirical studies, they are just captured by the error term. Although, in the collective approach, the caring attitude of a member is implicitly defined by the "sharing rule", independently of the fact of assuming or not "caring preferences". Hence, in the collective framework, egoistic preferences

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[1]In a structural model, we could think that there should be a parameter or a function that represents the degree of caring.

are not synonymous of egoistic behaviour, as the more or less caring attitude of the household members is part of the sharing rule.

While studying the welfare of children, it has to be considered that a child has different consumption needs than an adult, and is largely dependent on parents or other household members for the provision of their basic needs. In response to these concerns, several approaches have been introduced to identify a welfare index to scale income or consumption expenditure on the basis of the demographic composition of the family. According to Pollak and Wales (1979) and Bourguignon (1999) these methods suffer from a weak theoretical basis. In fact, comparing households with different demographic composition and, in other terms, identifying the welfare of children within the household, can be properly addressed only if the process of intra-household allocation of resources is explicitly taken into account. Bourguignon (1999) shows that with the collective approach it is possible to recover the allocation of consumption expenditures among adults and children sum up to an additive constant, while Chiappori and Ekeland (2009) have formally shown that the complete identification of individual welfare is achieved in the collective approach.

On the empirical side, several works confirm this attention toward intra-household resource allocation and child poverty mainly for developing countries (see, among others, Kanbur, 1991; Inchauste, 2001; Kebede, 2004; Sahn and Gerstle, 2004; Namoro and Roushdy, 2009). However, none of them has applied the collective framework to derive individual child welfare and, in particular, none of them has applied the collective consumption approach. The latter seems particularly reasonable in developing or transition countries, where consumption is a widely used measure of welfare, as incomes are difficult to survey because of the well known problems of informality suffered by these economies.

While the measurement of poverty and wellbeing of children has in the past played a marginal role in the overall poverty debate, in recent years they are attracting increasing attention, especially in the US and the UK[2]. The approach proposed by Bourguignon (1999) is, in effect, a reliable way to consistently identify child poverty and to keep it separate from the analysis of adult poverty. We find that, in the light of recent results due to Chiappori and Ekeland (2006, 2009), the Alderman et al. (1995) claim that collective models should be the rule and no more the exception, is

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[2]Pollard and Lee (2003) presents a comprehensive review of the state of literature on the measurement of child poverty and wellbeing.

becoming difficult to ignore.

In Chapter III, a collective consumption model is applied to evaluate child welfare in Albania. To properly identify the sharing rule for the child, a simplified model assuming the equal distribution of resources among adult members is used, and the child is not considered a public good but an economic agent with egoistic preferences exactly as the adult. In line with Bourguignon (1999), the case of caring preference would be a special case of the presented model.

### 1.1.3 Child welfare and child development

So far, the study of welfare has been based on consumer theory. However, there are several possible inputs other than monetary income or consumption that influence the present wellbeing of the children and the future development of their human capital. For example, the "capability approach" proposed by Sen (1992) suggests that the status of the individual in terms of, for example, health and education, influence the capability of gathering utility from income or consumption[3].

However, independently of the approach, the many other dimensions of child wellbeing are relevant on their own. Going back to the foundations of household economics, the concept of "child quality" (Becker, 1981) indicates an holistic concept of child welfare: children's wellbeing depends on several domains that influence present and future child development and thus the construction of future human capital[4].

Another important aspect in studying children's wellbeing is the opportunity to stratify the analysis by age cohorts both in terms of indicators and in terms of policy measures, especially if one refers to a holistic measure of child welfare. The outcomes related to child quality, not usually captured by household surveys, strictly rely on inputs that are easily measurable: child monetary welfare (or monetary resources devoted to children in the family, discussed in the previous section) or children's ability to access basic services as health and education. In particular, the role of education is fundamental for all of the domains of child quality and strictly depends on the decision-making process within the family.

Despite the fact that school enrolment gaps between developing and developed

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[3]This vision could be adapted to collective models in the sense that being more educated or healthy can influence the sharing rule and thus individual welfare.

[4]The literature identifies five main domains: psychical, psychological, cognitive, social and economic (see Pollard and Lee, 2003).

countries have been reduced in many countries, children still frequently experience problems in accessing education, even without considering the issue of child labour. Moreover, the quality of education is generally poor, and enrolment may not result in proper educational outcomes, with the consequence that being more educated may not produce economic benefits, reducing the incentive to send children to school.

Focusing on young children, several studies have provided evidence of the importance of participation in early-childhood programmes, defined as a human capital investment in the first years of life. Children's attendance to preschool programmes, especially in developing countries, is a determinant factor for cognitive development, health and nutritional status, school performance, productivity and income over the life course. Thus, preschool attendance is an indicator of several domains of child welfare, such as health, nutrition, socialisation, better education attainment in the future and so on (see Heckman and Masterov, 2007; Doyle et al., 2009, for a review of the economic rationale for investing in early childhood).

Focusing on school-aged children, developing countries still suffer from two major gaps: the gender gap and the rural/urban gap both in mandatory primary school and in the secondary school (Orazem and King, 2008). For this reason, it still makes sense to refer to a theoretical model of household behaviour for schooling. Orazem and King (2008) propose a simple static theoretical framework where the parents' utility is

$$U = U(\mathbf{x}, d_f, q_f(H_f, \mu_f, \mathbf{Z}), q_m(H_m, \mu_m, \mathbf{Z})), \tag{1.9}$$

where $\mathbf{x}$ is the parental consumption of goods, $q_m$ and $q_f$ are quality indexes of children, of daughters and sons respectively, resulting from human capital production and accumulation, depending on the proportions of time in school, $H_m$ and $H_f$, on children's academic abilities, $\mu_m$ and $\mu_f$, and on a vector $\mathbf{Z}$ representing the quality of local schools, teachers and curriculum, as well as the ability of other children in the school; $d_f$ is the discount for the utility of a daughter's education with respect to a son's education (Becker, 1971), under an income budget constraint. Thus, the linearised reduced-form demand for schooling for the child $k$ in the household $i$ is

$$H_{ij} = \alpha_0 + \alpha_1 A_i + \alpha_2 Z_i + \alpha_3 P_k + \alpha_4 X_i, \tag{1.10}$$

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where $A_i$ is non-labour income from assets, $P_k$ represents school cost for child $k$ (as fees, distance from school, etc.)[5] and $X_i$ is a vector of household and community variables. The error term of the econometric specification would include both the ability and $d_f$ which are typically unobserved.

In Chapter IV, this theoretical background is used to estimate demand for schooling and expenditure on education of Albanian households, extending the model to the case in which one of two parents has migrated abroad.

## 1.2 Policies for children considering intra-household allocation

Spending on education or supporting households with children is typically a long-term investment for a government: the resulting human capital improvement can influence growth in the long run (Mankiw et al., 1992) and reduce poverty thanks to positive effects on individual earnings (Mincer, 1974). In the classical literature of welfare economics, two types of transfers are studied to support a family's income: cash and in-kind. According to Atkinson (1987), the typical liberal economist's recommendation that redistribution should take the form of purchasing power[6] may not apply for several reasons. Examples include the fact that there may be different preferences in the way income is spent and this preferences are not available to the government (Blackorby and Donaldson, 1988).

Additionally, when one refers to "policies to support families with children," it is clear that the final objective of the policies is child's welfare. Within this class of policies, a cash-transfer measure should aim at reducing child poverty, which means adult's poverty in the long term, while in-kind transfers usually aim at supporting other domains of children's wellbeing such as nutrition, health or education. The effectiveness of both measures strictly depends on the behavioural responses of the families. In the case of cash benefits, the effect on child poverty depends on the targeting effectiveness and the intra-household distribution of resources[7]. With in-

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[5]It can also be thought of as the child opportunity cost in presence of child labour.

[6]This recommendation in welfare economics has been set out by Arrow (1963) under the assumptions of a perfectly competitive economy without external effects and full information.

[7]Kanbur (1991) is the first to point out that changes in intra-household inequality as the household welfare improves are important for the policy maker, as interventions are often restricted to the household level, while the objective is to improve the welfare of children.

kind transfers, government interventions are better targeted since they are more selective (Blackorby and Donaldson, 1988) and also influence family decisions with possible indirect effects also on child poverty. For example, in the simple model presented in Section 1.1.3, this may occur by subsidising the cost of schooling for the family or by giving other kinds of support at the household or the community level. However, since the price of schooling is not the only variable influencing the decision to send a child to school, the government needs to take into account other factors when designing in-kind interventions. For instance, if the government plans to provide free lunch at school, it should take into account the possibility of a reduced amount of nutrition received at home as a partial within-household redistribution of the benefit.

In the unitary model of the household, resources are equally distributed according to each member's needs. This implies that the marginal welfare improvements due to an increase of available income, as in the case of a cash transfer to the family, is the same for each household member, children included. In the collective model, instead, the impact of a cash transfer could benefit the member who receives it by strengthening his relative bargaining power. Thus, a categorical cash transfer programme is in principle more effective in reducing child poverty. Moreover, conditioning the cash transfer on specific requirements, such as child's school attendance, should favour the propensity to invest in the human capital of daughters and sons. Given the weakness of the "Pareto-improving cash transfers" theory in development settings, and the general concern for intra-household inequality, anti-poverty conditional cash transfers have been introduced in many countries[8], trying to re-conciliate the advantages of cash and in-kind transfers. Conditional cash transfers pose a constraint on the exploitation of additional public resources given to families, influencing both the sharing rule and equations (1.9) and (1.10) of the schooling demand model[9]. Barrientos and DeJong (2006) provide a comparative analysis of the effectiveness of cash-transfer programmes aimed at reducing child poverty, focusing on child support grants in South Africa (a categorical transfer)[10], on family allowances in transition economies (anti-poverty programmes supporting poor household with children) and

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[8]Programmes that make transfers conditional on children's school attendance or other qualitative requirements have been introduced in Bangladesh, Mexico, Brazil and Turkey (Kanbur, 2009)

[9]Equation 1.10 is also influenced by the quality of services publicly offered, hence the potential private return to education depends directly on the level of investment made by the government.

[10]It is an example of transfer reflecting the entitlement of poor children as individuals

on targeted conditional cash-transfer programmes in Latin America and Caribbean. They claim that different models of arranging transfers to children have broadly similar effects on household poverty. However, the previously raised issues of resource allocation among family members and how the transfer is invested are not addressed in their paper.

Looking at the welfare of young children, governments in several developing countries have introduced preschool programmes with the multiple objectives of improving child nutrition, child future cognitive development and to promote the labour-force participation of the mothers. A large body of literature evaluates the effects of preschool programmes in the United States, targeted at children from impoverished families (see, for example, the study of Chiswick and DebBurman, 2006, on immigrant families in the US). On the other hand, for developing countries, only two relevant impact evaluation studies of preschool programmes have been recently conducted (Behrman et al., 2004; Alderman et al., 2006). In general, researchers have devoted little attention to preschool interventions in developing countries, and all of the existing studies rely on the availability of detailed data on young children, often gathered by government agencies to evaluate just a specific program. Fortunately, things may change soon at this regard, thanks to the availability of new simple tools valuable for the *ex ante* evaluation of public policies specifically targeted to determined household members.

It is possible, in fact, to evaluate the outcomes of a child-targeted programme with widely available household survey data using the collective consumption framework. Bargain and Donni (2007) have developed a solid theoretical background for the ex-ante evaluation of child targeted measures, basing their analysis on collective models. In particular, they analyse the cost effectiveness of cash transfers and price subsidies and prove that, under certain conditions, subsidies are superior to cash transfers. Their setting starts from a household composed by an adult with a child, where the adult has caring preferences toward the child and the child has egoistic preferences. They rewrite equations (1.7) and (1.8), presented in Section 1.1.2, as

$$\max_{\phi_a,\phi_c} = v^a(\mathbf{p}, y) + \rho v^c(\mathbf{p}, y) \quad s.t. \quad \phi_a + \phi_c = y, \tag{1.11}$$

where $v^k(\mathbf{p}, y)$ is the indirect utility function for household's member $k$. This pro-

gramme solves according to the following first order condition

$$\frac{\partial v^a}{\partial \phi_a} - \rho \frac{\partial v^c}{\partial \phi_c} = 0, \tag{1.12}$$

which enables the computation of the marginal effects of income and prices. Starting from income, deriving (1.12) with respect to $y$ and solving for $\partial \phi / \partial y$, they obtain

$$\frac{\partial \phi}{\partial y} = -\frac{\lambda_a' / \lambda_a}{\theta} \quad \theta = -\left(\frac{\lambda_a'}{\lambda_a} + \frac{\lambda_c'}{\lambda_c}\right) > 0 \tag{1.13}$$

where $\phi = \phi_c$, $y - \phi = \phi_a$, $\lambda_k = \partial v^k / \partial \phi_k$ and $\lambda_k' = \partial^2 v^k / \partial \phi_k^2$. The ratio $\lambda_k' / \lambda_k$ is a measure of the concavity of member $k$'s utility and is called *income fluctuation aversion*[11], and the sum of both members income fluctuation aversions $\theta$ can be interpreted in terms of complementarity, measuring the convexity of the preferences of the benevolent parent toward the distribution of resources (the authors call $\theta$ *index of complementarity*).

Equation (1.13) tells us that the effect of income on the sharing rule is bounded by 0 and 1 and that an increment of available income will favour the member who is located to the less concave part of its utility function. This tells us that if the child's utility at the equilibrium point is more concave than that of the parent, he/she will be insured from income fluctuations, as the effect of income change on the sharing rule will be small.

Similarly, the authors derive an expression for the effect of price variations on the sharing rule:

$$\frac{\partial \phi}{\partial p_i} = x_i^c - R_i - \frac{\partial \phi}{\partial y} x_i \tag{1.14}$$

with $x_i = x_i^a + x_i^c$ and

$$R_i = \frac{1}{\theta} \left(\frac{\partial x_i^c(\mathbf{p}, \phi_c)}{\partial \phi_c} - \frac{\partial x_i^a(\mathbf{p}, \phi_a)}{\partial \phi_a}\right). \tag{1.15}$$

In equation (1.14), there are three terms: the first two terms, $x_i^c - R_i$, can be interpreted as the compensated effect of price on the sharing rule, that is, the change

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[11]The more the utility is concave (measured by $\partial^2 v^k / \partial \phi_k^2$), the more the individual is averse to income fluctuations. This concept is the same that founds the consumption smoothing theory.

in the child's share of resources resulting from a simultaneous variation in the price $p_i$ and in income $y$, which keeps the utility of the adult constant. The third is a standard income effect due to the variation of real available income caused by the increase of $p_i$.

Although these measures alone would be sufficient for the welfare analysis of children, the authors also develop an Hicksian variation $dV$, a monetary measure of the variation in child welfare, as

$$dV = -\sum_{i=1}^{n} \left( \frac{\partial v^c / \partial p_i}{\partial v^c / \partial \phi_c} + \frac{\partial \phi}{\partial p_i} \right) dp_i - \frac{\partial \phi}{\partial y} dy, \tag{1.16}$$

and apply this formula to the analysis of the marginal impacts of subsidies and cash transfers. Finally, they develop a framework to assess the targeting issue, differentiating the poverty line to be used to target poor children from that to be used to target poor adults. The authors use these results to suggest a simple rule to select goods for which the subsidy will have the largest impact on child welfare, to characterize the level of subsidy below which this policy dominates a cash benefit - when both instruments are implemented on the same cost basis - and to derive the conditions under which price subsidies dominate cash transfers in child poverty reduction.

With this advanced framework and the possibility of estimating collective consumption models with most living standard or household expenditure surveys, a better evaluation of the effectiveness of individually targeted policies is possible at a low cost. In fact, differently from randomized experiments, this setting is general enough to allow for the comparison of different measures without further costs: it would be a one shot investment of relatively small amount for a government.

This approach is particularly appealing for *ex ante* evaluations, but the collective consumption model can be used also for *ex post* evaluations of policy measures as shown in Chapter III.

## 1.3   Children of Albania

Albania is the smallest of the Eastern European transition countries[12] and has started the transition process from central planning as the most isolated, undeveloped and poor country in Europe. For centuries, the country had been unknown and isolated, gaining its independence from Ottoman rule in 1912 and international recognition in 1920. From 1945 to 1991, the dictatorship of Enver Hoxha and Ramiz Alia (from 1985) made the country completely isolated[13]. Albanian communism was signed by complete reliance on central planning, the elimination of any form of private property or activity and the strong emphasis on national self-reliance. A strong propaganda was used to create the population's sense of isolation and fear of the outside world, which, according to the government, was waiting for the opportunity to invade Albania (Lawson et al., 2000).

Consequently, when the transition began in 1991, it shocked the population, which was completely unfamiliar with market institutions. Indeed, Albania was one the countries following the "shock therapy" as path of reforms. Price controls were eliminated, internal and external markets liberalised rapidly, the privatisation process ended early (Azzarri et al., 2006) and tight fiscal and monetary policies were applied. In 1992, the national currency (lek) was made internationally convertible with a floating exchange rate (Bezemer, 2001). After an initial dramatic period of decrease in output, high inflation and waves of poverty-induced emigration, by the end of 1992 the macroeconomic circumstances stabilised and in the subsequent four years the recovery continued with an average GDP growth rate close to 10% (Jarvis, 2000).

The sharp break in positive trends came in spring 1997. Pyramid (or Ponzi[14]) schemes had been operating since 1992, and in February 1997, they collapsed with a large share of population's savings. The diffused rebellion, induced by the collusion between pyramid entrepreneurs and the government elected democratically in 1992, ended in civil disorders and the collapse of state power, with the south of the country

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[12]It is located by the Adriatic Sea, bordering Greece to the South, Macedonia to the East and Yugoslavia to the North; it has a population of 3.2 million.

[13]The dictators were hostile to any external influence, breaking with USSR and China, as they were "too moderate" (Jarvis, 2000).

[14]Ponzi finance is a situation in which cash payments on debts are met by increasing the amount of debt outstanding (Bezemer, 2001)

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controlled by armed groups. More than 3,000 people were killed and an international military force intervened to allow humanitarian operations. The economy collapsed, but, in the following years, the country performed quite well in sustaining high rates of growth and allowing the economy to approach middle-income nations levels; according to the World Bank (from now on abbreviated as WB) between 1998 and 2006 real GDP has averaged almost 7% annually with good performance in keeping inflation low (WB, 2006). In spite of this, the unemployment rate has increased to about 22.7% and even to higher rates for women (28.4%) in 2001. Despite a positive evolution in macroeconomic trends, and a good trend in poverty reduction, Albania remains among the poorest countries in Europe, with 25% of Albanians living in absolute poverty in 2002 and 19% in 2005[15]. The recent global financial crisis has interrupted the positive trend in the rate of growth and poverty reduction, with a decrease in the GDP growth rate from 6.8% in 2008 to 0.4% in 2009, according to the IMF.

### 1.3.1 The village and the household

During transition and under the described circumstances, the state and other formal institutions became weak, leaving room for the re-emergence of traditional forms of "governance". The customary law, effective prior to communism, reacquired relevance in the organisation of collectivity in Albania. The village is formally the smallest level of administration, electing a leader of a council (head of the village), which negotiates with the next tier of government, the "commune". Usually, a commune administrates 10-15 villages and refers to a district[16]. This structure is very important in determining the households' living strategies, particularly in rural areas. According to Lawson et al. (2000), the social institutions at the village level are very important in part because of the absence of developed market institutions and in part because of the important influences of non-capitalistic and pre-capitalistic structures. Beyond the nuclear family, the *vllazni* (brotherhood) and *fis* (clan) are very important in the economic and political structure of a village[17]. The first is

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[15]These are the years in which nationally representative household surveys are available.

[16]In total there are 36 districts.

[17]This institutions came from the *Kanun*, a customary law used since the 15th century and remained alive in spite of many attempts by governments to eliminate it. For the *Kanun*, the authority is an exclusive prerogative of men. It legitimated the domination of men also within the nuclear family.

formed by brothers of a family (normally enlarged families) and is used for advice and emergency aid, while the second is composed by members of an extended family with same surname. The *fis* is very paternalistic, largely used as a network of mutual support for economic information as well as income transfers. Cohesion of the village as a community is characterised by the tradition of giving gifts to families on the occasion of significant events, also to provide material assistance. Severely poor households not able to reciprocate were generally excluded from support and interaction (Lawson et al., 2000). In the northern mountain area of the country, the key collective tent to be a *fis* more than the household.

However the family is a very strong institution in all of Albania. The socially integrated structures of family are based on the patriarchal authority within the family, where women have an important function in the management of the material life of the household but do not take part in decision making. Traditionally, the father allocates money within the family, and there is a general preference for male children. A daughter leaves her natal home at marriage, becoming part of the husband's family. The status of woman during communism changed dramatically with the acquisition of formal rights, access to education and involvement in production. On the other side, private domestic life remained patriarchal also during communism[18]. Although the strength of the family seems to resist during the deep transformations of the country to communism and later to market economy, the intra-household relations and roles have became weaker over time. Many studies have placed emphasis on the nature of decision making within the Albanian household, which has been largely complicated by the migration of young members (King and Vullnetari, 2003; Danaj et al., 2005; Gjonca et al., 2008).

### 1.3.2 Poor families and poor children: a profile

One of early attempts to measure poverty in Albania was a study done by the WB in 1996 using the data from a Household Budget Survey conducted in 1993-1994. Later, the first Living Standard Measurement Survey in 1997 suggested that poverty was mainly a rural phenomenon, with almost 90 percent of the poor residing in rural areas. The incidence of rural poverty was found to be five times higher than urban poverty

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[18]For an extensive survey on the emancipation of Albanian women during communism see Falkingham and Gjonca (2001).

and was higher in the northern regions of Albania (WB, 2003). The first nationally representative household survey was conducted in 1998 by the national statistical institute (INSTAT), showing that households most likely to be poor are those that are large, with three or more children, implying that a large number of children live in poverty (WB, 2003). However, the LSMS 2002 was the first Albanian attempt to collect all the necessary information for a consumption-based money metric at the national level. In 2002, the incidence of poor households was 25%, while poor children under five amounted to 34% and the proportion of poor primary school-aged children were 32% and that of poor adolescents was 30% (WB, 2003). Moreover, one child on seven in Albania was severely stunted, while one on three was moderately stunted[19]. Primary school enrolment rates were lower among the poor and were lowest among the extreme poor. The phenomenon was even more pronounced for enrolment rates in secondary school. Spatially, households in the most remote districts in the Mountain region in the northern and northeastern areas of the country were poorer, and more than a fifth in this group lived in extreme poverty. A total of 34.8% of the rural population was poor, and more than 30% of households lived of self-consumption. Figure 1.1 shows that both household and individual poverty were more diffused in northern areas and in the central eastern area. The southern area is on the contrary traditionally richer, as is the area surrounding the capital city (Tirana).

In the period between 2002 and 2005, there was a massive reduction in poverty; roughly 235,000 households were lifted out of poverty, mainly due to economic growth. Average consumption increased by 17 percentage points in 2005, and the difference in poverty rates across regions narrowed, mainly benefitting mountain regions (WB, 2007). Instead, the urban/rural gap persists, as does the correlation of poverty with household size and number of children. It is widely recognised that children are one of the groups shown to be more vulnerable in the transition period[20]. According to UNICEF (2009), the percentage of children up to 15 years in poverty is 24.5%, the highest in Europe after the Republic of Moldova. The mortality rate of children under five almost halved between 2000 and 2007, but it still reaches 15 per thousands of births in 2007 against the European average of 4. The incidence

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[19]ALSMS 2002 collected good information on child and maternal health. Unfortunately, this information is not present in ALSMS 2005.

[20]See Cornia (1995) for a detailed analysis of the problems suffered by children during the transition.

Figure 1.1: Poverty Map of Albania: Headcount Ratio at Household Level (a) and Individual Level (b) in 2002 by Districts (Tzavidis et al., 2008)
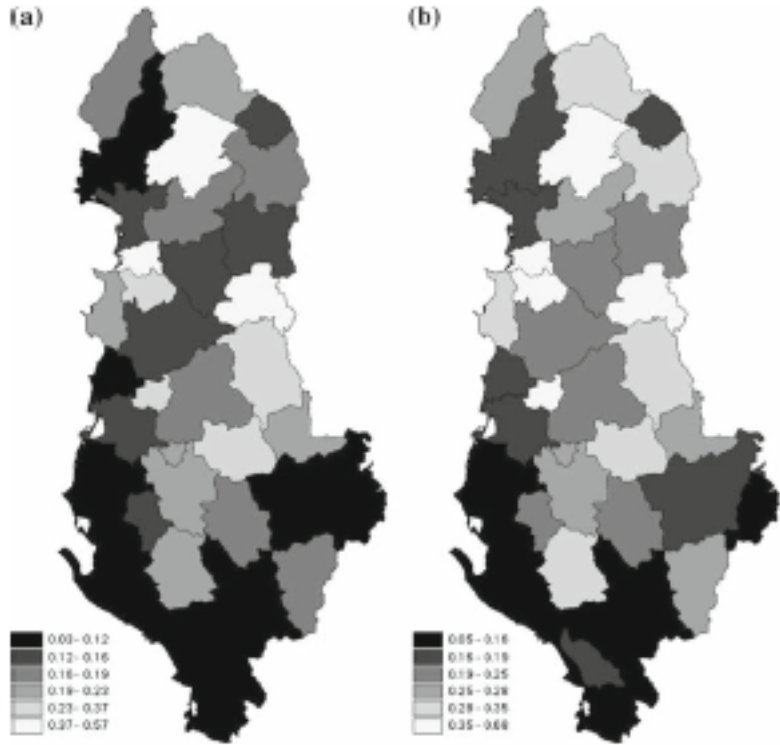
of stunting[21] is the second highest (27%) among transition economies of Europe and Central Asia after Tajikistan. Pre-primary school attendance is the lowest in Europe, with only one fifth of children attending, and adolescents have experienced a sharp decline in secondary school enrolment during transition (Danaj et al., 2005), also because of the poor quality of education[22]. Consequently, education is costly for households, and expenditures related to investments in human capital are likely to be the source of strong inequalities both between and within families. Indeed, income-related poverty is mainly due to the lack of access to basic infrastructures, education and health services.

### 1.3.3   A country on the move

It is widely recognised that migration explains a large part of the decrease in the poverty rate during the transition period due to the income effect of remittances. Albania has been defined as "a country on the move", witnessing one of the greatest emigration countries of recent times. When in 1990 around 5,000 Albanians invaded western embassies in Tirana, they were taking the first symbolic step towards their "long-denied right to emigrate" (King and Vullnetari, 2003). Following this first step, in the past 15 years, permanent international migration out of Albania has been massive. About 34% of households have at least one former member living abroad in 2005 and about 1 on 2 of these households have more than one former member living abroad. Of the almost one million individuals who have split off from the original household since 1990, about one half are currently living abroad. Of these, about 80 percent are equally divided between Greece and Italy, while the remaining 20 percent have migrated to other European destinations or to North America (WB, 2007). Over 55% of permanent international migrants hail from rural households. In more recent years, this ratio has increased, so that by 2002, migration from rural areas accounted for about two thirds of total migration. According to WB (2007) permanent migrants are generally younger, male and slightly more educated than the average adult left behind.

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[21]Stunting is a reflection of chronic malnutrition as a result of the failure to receive adequate nutrition over a long period and recurrent or chronic illness (UNICEF, 2000).

[22]According to PISA assessments, their scores in reading and mathematics were the worst of Europe in 2000 (UNICEF, 2009). Unfortunately, there are no data to assess the possible current improvement.

Remittances have a big effect in fostering national income accounting for 15% of GDP between 2004 and 2006 (WB, 2007) and for 13% in 2007 (UNICEF, 2009). They were also a source of foreign currency, which helped to cover trade deficits in the balance of payments and provoked the negative macroeconomic consequence of worsening the terms of trade due to the "Dutch Disease" effect. To date, much more emphasis has been given to the analysis of out-migration, mostly of young household members who, driven by economic hardship, are being lured to wealthier neighbouring countries. Little attention has been paid, both in policy making and in research, to the impact of return migration, which is becoming increasingly important as the migration process matures. A study of the impact of migration on human capital outcomes in Albania (WB, 2007) shows that households with permanent international migrants have, on average, lower enrolment rates than households without international migrants, mainly in the case of secondary school education. Consequently, the positive effects of migration are counterbalanced by the outcome that migrant households invest less in education, especially in that of female children in rural areas. King et al. (2005) suggests that a deeper analysis of Albania's migration should take into account the ensuing difficulties felt by those left behind, especially children and older people.

### 1.3.4 Policies towards households and children

The scarcity of public resources exacerbated by transition has led to poor social services for helping vulnerable households and individuals. Indeed, if one analyses the composition of Albanian public spending, there is relatively low spending on education and a poor allocation of resources to health and social protection. In 2006 the expenditure devoted to education was 3.9% of the GDP, while the resource allocated to health sector only the 2.7% of GDP. The social assistance account for the 2.3% of GDP (WB, 2006). Including pension benefits on expenditure for social transfers, the level of expenditure on social protection become more adequate: with old age pensions expenditure the social protection account for 6.9%. Indeed the share of expenditure devoted in 2006 to social insurance was the 76% of social protection, the social protection accounts for 19% while labour market programmes 2% (WB, 2006). Following WB (2006) the tiny expenditure on education is efficient if compared with similar countries, while huge inefficiencies result in the health sector and in the

administration of social protection programmes.

Looking at the policies for families with children, there are no specific child allowances but only a means-tested benefit towards poor households. This program, *Ndime Ekonomike*, is complex to administer and is characterised by poor coverage and the inadequacy of the benefit level[23]. It accounted for 2.3% of GDP in 2000 and decreased to only 1.2% in 2005. Looking at the household income composition of poor families, the programme accounts for only 8.5% of their total income, while old-age pensions account for 28%. Moving to in-kind measures, transfers for children suffer from very poor quality of the services, as for education, which causes relatively poor scoring of Albanian children with respect to other transition countries. Primary education has received most of the attention during transition, with a general negligence toward secondary-school investment. Preschool education is not yet considered a priority in the education system, with the respective ministry allocating not more than 5% of the total budget for that end. Following UNICEF (2004), poor communes in the country do not have access to preschool system as a result of the unavailability of funds and the preschool education system generally being faced with myriad infrastructure, financial, and staff problems.

In terms of equity, in principle, preschool, basic education (including textbooks), secondary education and school transport are free of charge for all households. Unfortunately, looking at the distribution of scholarships to promote education attendance, the WB (2006) found that they tend to be very regressive[24]. Equity is also worsened by the wide diffusion of corruption in the distribution of subsidies and services. Since the collapse of communism, there has been a steady growth in the bribe-taking behaviour of state officials. State employees in the health and education sectors, and those dealing with services or benefits provided by the state, in general demand bribes for inclusion in public programmes, medical treatments and schooling progression.

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[23]The level of the benefit was 2161.03 Albanian lek in 2005 with respect to an average salary of a public sector employee equal to 27300 lek.

[24]These scholarships are available for secondary and tertiary schools.

## 1.4 Contents of the essays

The remainder of the thesis is organised as follows. Chapter II analyses the targeting and the impact of *Ndihma Ekonomike*, a means-testing social transfer aimed to protect vulnerable household from poverty during transition. The programme is the only instrument supporting child poverty, even if it is not a categorical cash transfer specifically targeted to children. It is aimed to be a general anti-poverty programme, which, in reducing households poverty incidence, should also improve the welfare of children, generally overrepresented among the poor. The programme recipient is the family, and eligibility depends on few family features. Hence, the assessment is developed using household data. In spite of a general lack of program evaluation studies in transition countries, *Ndihma Ekonomike* has received considerable attention by researchers, mainly for its decentralised nature and because it was the only public safety net during the Albanian transition. These analyses are concentrated on community-based targeting evaluation or on the political economy of the program. However, to see whether the policy instrument is effective in improving the welfare of poor households, a robust evaluation strategy is needed. To perform a consistent evaluation of a specific programme, one should observe the outcomes of the participants in case they do not receive the benefit. Since this is impossible for obvious reasons, programme evaluation literature seeks to find a way to predict missing data on counterfactuals. Thus, to evaluate a program, non-participants outcomes can be used as counterfactual, and the challenge of evaluation is how to minimise the bias, namely the differences between participants and non-participants, due to observables and unobservable variables. Chapter II deals with this problem using a regression-adjusted matching estimator first suggested by Heckman et al. (1997, 1998) and exploits a discontinuity in programme design to evaluate the advantages of decentralised targeting. It is the first time that this methodology is applied to an anti-poverty programme in a developing context.

Chapter III estimates the welfare of young children and evaluates the impact of two kinds of policies on their welfare using a collective consumption model. It proposes a theoretical model to deal with child poverty considering the intra-household allocation of resources. Bourguignon (1999) shows the importance of using collective models to analyse the cost of children, while Bargain and Donni (2007) develop the theoretical foundations for the ex-ante evaluation of the impact of public policies on

child poverty within the collective framework. The proposed model, based on the work of the aforementioned authors, considers an adult/child equivalent household that allows to econometrically identify children's individual welfare. The chapter develops and applies the collective consumption framework to estimate the child "sharing rule" in Albania and evaluates the impact that public policies have on it, thus applying the collective consumption model also to an *ex post* policy evaluation.

The extent of child poverty and inequality computed on the individual welfare measure estimated with the collective model changes with respect to per-capita expenditure or equivalence scales, which do not approximate sufficiently well the real intra-household distribution of resources. This suggests that policy makers should take seriously into account the issue of intra-household inequality. In fact, the assessed marginal impact of two different subsides - the NE benefit as a cash transfer and preschool attendance as an in-kind measure - on children's welfare suggests that the in-kind is the most effective measure for alleviating child poverty in this context, confirming the theoretical results found in Bargain and Donni (2007). This is just a first step in the direction of assessing the concerns, expressed in the previous section, about the difficulties of the Albanian household to find a new identity in the jungle of values among the patriarchal tradition, values imposed by communist rule and the changes imposed by the market economy: Chapter III explores the intra-household resources allocation decision-making process spotting some light into the Albanian households black box.

Chapter IV estimates the demand for schooling and expenditure on education of Albanian households, extending the model to the case in which household decision is influenced by the emigration of one or both parents. Albania in the last 15 years has been a country on the move, due to massive male migrations abroad, and the phenomenon of children left behind at home has a relevant incidence among migration episodes. Development agencies have expressed concern for children's wellbeing and the investment in human capital of migrant families for the possible negative consequences negative consequences of migration on children's welfare when children are left behind during migration. The rationale of those concerns is that, although parents' migration usually benefits children economically, the lack of parental care may cause relational and psychological problems that may affect children's welfare in the long term. Features of the data available for Albania are fundamental to the scope of the analysis. Unlike other surveys, Albanian LSMS 2005 enables the reconstruc-

tion of "left behind" episodes of children in the migration history of their parents. There are two main advantages: 1) the status of the child during parental migration can be consistently recovered, and 2) retrospective information on migration is collected, allowing to effectively identify the long-run effects of the phenomenon. The analysis is conducted on three separate groups: children under the age of five, primary-school-aged children and adolescents. As to the econometric method, probit models are applied to evaluate the decision of sending young children to preschool; school progression of older children and adolescents is modelled using ordered-choice models; finally, focussing on school attendance, a survival analysis of participation in schooling is performed with both discrete and continuous time models. The rationale behind this choice lies in the actual structure of the data. In fact, both relevant episodes that are under investigation, i.e. drop out of school and having been left behind, happened in the past. The Albanian LSMS allows to examine the migration history of parents and the schooling experience of children. With these data available, the choice of duration models applied to the schooling period appears particularly appealing.

# Chapter 2

# Cash Transfers and Weak Targeting: the Impact of *Ndihma Ekonomike* on Household Welfare

The Albanian *Ndihma Ekonomike* is one of the first poverty reduction programs launched in transition economies. Its record has been judged positively during the recession period of the 1990s and negatively during the more recent growth phase. This chapter reconsiders the program using a regression-adjusted matching estimator first suggested by Heckman et al. (1997, 1998), exploiting discontinuities in program design and targeting failures. The program has a weak targeting capacity and a negative and significant impact on welfare. The recent changes introduced to the program have not improved its performance. Results are robust to adjustments in the outcome variable and to an analysis of the treatment distributions based on stochastic dominance theory.

## 2.1 "Pareto improving" transfers, targeting strategies and behavioural responses

It is widely accepted that the abolition of poverty is a central policy objective. However, there is disagreement on what "poverty" means and which is the best policy instrument to reduce it. The welfare economics literature from the beginning deals with possible measures to alleviate poverty (Pigou, 1920). According to Atkinson (1987) there are two main approaches to poverty reduction within welfare economics: the "individual interest" approach (Harsanyi, 1955; Hochman and Rodgers, 1969) and the "social welfare" approach (Arrow, 1973b,a; Hochman and Peterson, 1974). Within the first approach the article of Hochman and Rodgers (1969) derive the theory on " Pareto improving" transfers[1]. They suggests that if the objective of a public good program is reducing poverty, the immediate response is providing cash directly to the poor. Cash transfers would be Pareto-dominant to in-kind services because individuals would be able to allocate resources more efficiently[2]. However, one of the problems that make cash transfers less preferable than in-kind transfers is that the people responsible for transfers redistribution are not able to perfectly target the beneficiaries, since in operating of a transfer program there is often an asymmetry of information (Hoff and Stiglitz, 1990)[3]. Therefore, if information about preferences is not publicly available to the government, the superiority of transfers of purchasing power over transfers of good disappears as suggested firstly by Nichols and Zeckhauser (1982) and later by Blackorby and Donaldson (1988). Following Nichols and Zeckhauser (1982) in-kind transfers may be used to discriminate better between those eligible for support and those who are "shams".

Improvements in targeting efficiency aims at reducing some of these problems and making cash transfers more suitable. Hence the effectiveness of poverty alleviation capacity of family benefits depend mostly on the ability of the program to target those effectively poor, as firstly pointed out by Akerlof (1978) and extensively discussed in Atkinson (1995) and Cornia and Steward (1995) for developing countries.

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[1] The approach of Pareto-optimal redistribution and its application to means-tested benefits in cash is widely surveyed in Atkinson (1987).

[2] Atkinson (1987) surveyed the debate on the relative merits of cash versus in-kind transfers as instruments of redistribution, a question particularly relevant in the debate of poverty reduction actions in developing world.

[3] According to Atkinson (1995) there is a clear principal agent problem in the design of a transfer.

To address the problem of information on who is poor, community-based targeting uses a group of community members or a community leader, whose main functions are not related to the program, to decide who in the community should benefit. For this reason the decentralized targeting for social services has been largely promoted by development agencies. The main argument of the supporters, firstly proposed in the theory of fiscal federalism by Oates (1972), is the following: decentralized management would maximize efficiency thanks to the information advantage of the local administrations, i.e. the ability to identify who is poor and who is not in a relatively small community. As consequence developing country governments often delegate authority over the targeting of anti-poverty programs to community organizations, while retaining control over how much goes to each community. An important advantage of this targeting method in developing and transition economies is the traditional role played by community or village leader, which may assure a better targeting efficiency. On the other hand, in the case of weak institutions and widespread corruption, the road of decentralized targeting is less persuasive: there is the possibility that local preferences are not pro-poor and many unobserved variables are likely to be determinant, due to local program participation by the non-poor (see Conning and Kevane, 2002, for an extensive discussion).

Evaluation of community-based targeting is likely to encounter numerous challenges. If local agents can identify the poor better than conventional survey methods or means-testing, because they use difficult to observe indicators such as capability deprivation, functioning, status, access to networks, etc., then evaluation of targeting according to standard criteria may not be sufficient. Coming to evaluation of the program's impact, the problem of unobserved heterogeneity related to local discretionality is again relevant in order to faithfully model the process of program participation decision. Galasso and Ravallion (2005) offered a theoretical characterization of the information structure in programs with a decentralized operation and derived an index to measure targeting performance in the case of community management.

Returning to the debate on in-kind and cash transfers, the latter are also preferable for their long-term investment properties and the reduced risk of leakage-use of payments in non-desirable commodities (undesirable behavioural response). Indeed, an increasing interest among economists on income supporting programs is related to the significant negative effects of such programs on the behaviour of the individu-

als, for instance on labour supply, welfare dependence and savings (Atkinson, 1987, 1995). In particular Kanbur et al. (1994) studied how the introduction of the variable "labour supply" influences the impact of poverty alleviation programs in developing countries. Sometimes the disincentive effects of the cash benefits may be larger than redistributive gains. A negative labour supply response, for instance, may offset the program's planned poverty reduction. Most of the evaluation on anti-poverty programs behavioural responses comes from developed countries. In developing world this effects can be minimal since they have high rates of unemployment but the evaluation is also more complex to address.

In order to properly deal with this concern it is necessary to make a step beyond targeting evaluation and to exploit an *ex post* econometric impact evaluation or an *ex ante* microsimulation techniques in order to effectively take into account behavioural responses. The problem of evaluating econometrically the effect of treatment has been deeply studied with a long history in statistics and econometrics, but the applied literature to public policies in developing countries is relatively recent, even though growing and wide enough to see the different methods already tested. A general request for consistent impact evaluation comes also from governments and aid agencies, at the point that also several randomized trials have been recently implemented[4]. Evaluation is particularly important when the objective of the program is poverty reduction since it is relevant to see if there is an effective improvement on welfare of the beneficiaries.

## 2.2   Anti-poverty programs in transition economies

In the former command economies of Europe and Central Asia, anti-poverty programs launched during the 1990s in response to the transitional recession were very few and built on a complex system of categorical cash transfers, heritage of the socialist past. These programs took the form of cash transfers and were initially devised for the poor.

The focus on the poor constituted a break from the past and emerged as a combination of several factors. First, the transitional recession had increased poverty to unprecedented levels and this required a government response. Second, transitional

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[4]Randomized trials are a powerful evaluation tool but they tend to be costly and the results they produce are limited to the measure under evaluation.

economies acted under a severe budget constraint and the choice of a restricted number of beneficiaries was essential. And third, these countries worked in the framework of international financial assistance and this assistance was largely earmarked to the poor. Targeting the poor with cash transfers was an almost obliged choice for transitional economies. Even if these programs contributed in part to erode shares of public expenditure allocated to education or health (Gray et al., 2007).

Since in the early transition the dominant coping mechanisms for the resulting poor households was informal transfers from clan and community members, in many cases when anti-poverty programs were implemented in the '90s, a mixed strategy of means testing and community-based has been considered a good targeting method in order to reach the poor already exploiting the existing informal safety net (Conning and Kevane, 2002). There is some supporting evidence, among the studies on transition countries, that a community management leads to better targeting performance thanks to the traditional role of the community's or village's leader (see Marnie and Micklewright, 2005; Alderman, 2002, on Uzbekistan and Albania) even if these studies have not performed impact evaluations.

Were cash transfers for the poor successful in mitigating the negative consequences of transition on poverty? The answer to this question is mixed. Ravallion et al. (1995) found that the safety net in Hungary was able to protect effectively from poverty but did not play an important role in lifting people out of poverty. Okrasa (1999) found for Poland a general positive impact of social transfers on redistribution, a positive but moderate impact on reducing the poverty spell and a positive impact on exiting poverty. Milanovic (2000) found for Latvia a weak pro-poor role of social protection benefits. Lokshin and Ravallion (2000) analyzed the role of the social safety net in protecting the poor from the 1998 Russian financial crisis and concluded that the social safety net in place was largely insufficient to protect the poor. Van de Walle (2004) tested the public safety net in Vietnam and found a very marginal role of the social safety net in protecting people from poverty or promoting an exit from poverty. Verme (2008) looked at social assistance benefits in Moldova using panel data between 2001 and 2004 and found a non-positive impact on welfare. A comprehensive program evaluation is performed by Chase (2002) on Armenia. He estimates the impacts of a social fund at community level in Armenia and found a positive impact of education's and water supply's projects on demand of education and health. The program, even if not specifically designed to support

poor communities, benefits the less well-off part of the population.

All these studies emerged in the context of WB assistance to transitional economies and share the feature of evaluating bundles of transfers rather than individual programs. This is evidently a limitation given that only a few cash transfers were specifically designed for the poor. Moreover the majority of them do not perform an impact evaluation of those programs on household's welfare, which is the expected outcome of the income supporting programs.

Despite of the positive progresses in evaluating developing world anti-poverty programs, there is still a general negligence towards the application of these recently developed methods in transition economies of Europe and Central Asia, because budget constraints limit the use of public resources for evaluations and researchers have not sufficient quality data in order to conduct consistent estimations. Also, several of the early evaluations relied on scarce data, resulting in incidence rather than impact evaluations, with limited or no consideration of behavioural implications. Moreover, only a handful of countries had pro-poor programs in place at the beginning of the 1990s during the deep recession and only some of these countries maintained these programs during the more recent growth phase. As a consequence, evaluations of pro-poor programs during the recent growth phase are scarce and they do not benefit from benchmark evaluations carried out during the 1990s.

## 2.3 The *Ndihma Ekonomike* program

One program that received consistent attention during the recession and growth periods, mainly for its decentralized nature, is the *Ndihma Ekonomike* (Economic Support) program in Albania. Case (2001) looked at political factors influencing the local budget allocations for the program during the 1990s and found these factors to be relevant. Alderman (2001, 2002) used a 1996 survey to assess the targeting performance and found that a) targeting was rather good as compared to other poverty reduction programs in developing economies; b) local officials use local information to target the poor not easily captured by household surveys, leading to better targeting and c) poorer jurisdictions are better in targeting the poorer than richer jurisdictions. More recently, Dabalen et al. (2008) have looked at the program and tested the poverty implications as compared to the old-age pension program using the pooled 2002 and 2005 living standards surveys. They find a negative impact of

Ndihma Ekonomike on poverty and a higher level of discontent with life for program participants respect to a control group.

In this chapter, the 2002 and 2005 surveys are used following a different evaluation strategy to assess and validate the impact of Ndihma Ekonomike on poverty. The analysis considers the 2002 and 2005 surveys separately and exploit a discontinuity in program design occurred during the period to evaluate the impact of these changes on poverty. The treatment effect is estimated using a regression-adjusted matching method first proposed by Heckman et al. (1997, 1998). Some valuable features of the data allow to meet the basic conditions required by the method and estimate single means differences for both years and the difference-in-differences over the period. Moreover, the Conditional Difference-in-Difference Matching estimator proposed by Heckman et al. (1997) is exploited to evaluate the impact of policy change occurred between the two cross-sectional surveys. This change consisted mainly in a reduction of the decentralized powers in the identification of eligible households and in the definition of the program's monthly payment.

In contrast to Alderman (2001), the present study finds that the program have a very poor targeting performance. However, there is strong heterogeneity in targeting performance across local administrations supporting both Case (2001) and Alderman (2002) findings in this respect. Negative and significant effect on poverty for 2002 and 2005 are also found, which is in line with Dabalen et al. (2008) findings on the pooled 2002-2005 sample. In addition, a non-positive effect for the period 2002-2005 indicates that changes in program design have not improved the performance of the program. Results are robust to adjustments in the outcome variable and to an analysis of the treatment distributions based on stochastic dominance theory.

### 2.3.1 Eligibility criteria

*Ndihma Ekonomike* (NE) is the only program in Albania to target specifically the poor[5]. It was introduced in 1993 in response to the economic crisis induced by the transition process. Eligibility is based on means testing and categorical criteria and

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[5]Details of the program can be found in the study prepared by Vilma Kolpeja for the WB "Program Implementation Matters for Targeting Performance: Evidence and Lessons from Eastern and Central Europe" (2006) and from the Albania Law no. 9355 on *Ndihma Ekonomike* and social services available from the Albanian Council of Ministers (http://www.mpcs.gov.al/ligje-legjislacioni-social-ligje).

the program provides cash transfers to eligible households on a monthly basis. In 2005, NE expenditure accounted for 0.4 % of GDP or 10% of government expenditure on social protection, down from 1.4% of GDP in 1993. The program has been considered crucial in the early transition in order to reduce poverty impact (Kolpeja, 2006) and targeting performance in the 90s was judged positively as compared to other similar programs in transition economies (WB, 2006). NE was the first public service scheme to be decentralized and its administration was responsibility of municipalities and communes.

The program design changed on several occasions. NE was originally designed to support urban families without other sources of income and rural families with small land ownership. In 1994 and 1995 the law governing the program was reformed and the program was extended to all poor households. The program was again revised in early 2005 with the replacement of the means-testing formula and a few changes on administrative procedures. This chapter focusses on the period 2002-2005 and with special attention towards last reform occurred in early 2005, where the government reduced communities' role in the benefit's administration.

Application to the program is responsibility of the household. The head of the household files an application form, undergoes an interview at the local NE office and provides a list of documents on the status of the household and its members provided by other state institutions such as the property registry and the employment office. Upon verification of the necessary documentation the household is visited by a social welfare officer who is responsible for drafting a first list of beneficiaries based on personal judgements and on the eligibility criteria established by law.

The eligibility criteria of the program are established by law nationally but local officials have a certain autonomy in choosing beneficiaries and amounts. Local officials had the right to define the amount of the benefit taking into account various social factors, in addition to the eligibility criteria established by law and described in details later. However, only the largest municipalities such as Tirana and Durres introduced by law a few additional criteria to grant benefits. In the remaining municipalities exceptional factors are considered case by case in the process of defining household's benefits. This freedom of action in defining eligibility was reduced in 2005. Eligibility criteria defined by law include categorical "exclusion criteria" and means-tests. Households are excluded from the program if the head of the household or at least one member: 1) owns capital assets with the exception of the living house

and agricultural land; 2) is employed or self-employed, except agricultural workers; 3) is unemployed and not registered as job-seeker, with the exception of disabled and agricultural workers; 4) is leaving abroad for any reason except for studying, medical treatment or working for diplomatic offices or international organizations; 5) refuses offers for employment, community work or land if in working age; 6) takes "deliberate actions" aiming to get NE benefit if not eligible. In practice, these criteria aim at excluding those households whose members are likely to have other sources of income and/or exhibit a passive behaviour.

The means-testing formula is based on household composition and changed over the period considered. Until 2005, means-tests were based on a formula that computed income thresholds by household as $T = M(0.95H + 0.95E + 0.19W + 0.2375C)$, where $M$ was the national level of unemployment compensation, $H$ referred to the head of household, $E$ was the number of other family members above working age or disabled, $W$ was the number of working age members, and $C$ was the number of household members under working age. In substance, the income threshold was equal to the unemployment benefit scaled with the weights in parenthesis attributed to the different type of household members. An eligible household received a cash transfer equal to the difference between this threshold and actual household income declared to the office. If the resulting benefit was zero the family was not eligible. The level of the NE benefit was designed to be below incomes generated from unemployment benefit, pension schemes and minimum wage. This was to encourage households' members to resume work when this became available.

Starting from 2005, a new law regulates program administration. Two major changes have been introduced. The first is that the income threshold is no more linked to unemployment benefit and the second is that the freedom of local officials in granting benefits has been narrowed. The level of benefit that each family can receive now depends on the income threshold computation defined as $T = 2600H + 2600E + 600W + 700C$ where numbers are expressed in local currency (lek). The new law also introduced a lower bound for the transfer at 800 lek, which excludes households previously entitled to a transfer smaller than 800 lek. A maximum transfer of 7000 lek is also established. Moreover, the smaller freedom granted to local officials in assigning benefits reduces *de facto* the capacity of the government to use local information for better targeting, an attractive feature of the program until 2005. Thus, there is the opportunity to use the discontinuity in program design

to evaluate the impact of changes in the means-test and in the freedom of choice granted to local administrators.

In substance, given the characteristics of the program described, the key aspects to take into account for selection into the program seem to be: 1) Eligibility based on household income; 2) Employment status of household members; 3) Local heterogeneity in decision making 4) Presence of members emigrated 5) Property of assets and 6) Urban/rural location (agricultural workers are waived from some of the categorical exclusion criteria for eligibility). These are observable characteristics to prioritize when considering program participation in the evaluation strategy.

### 2.3.2 Performances of the community-based targeting

Looking at *Ndihma Ekonomike*'s performance using a standard poverty analysis one sees 1% and 2% of poverty reduction for 2002 and 2005, suggesting that without the program the incidence of poverty would be higher (Table 2.1). Nevertheless the relevant values of leakage and under-coverage rates show that there are problems of targeting in addition to inadequacy of program's design and resources. More than half of the beneficiaries are non-poor families. Targeting coefficients are positive but near to "0": even though the program is designed to support poor families, it is approaching to be untargeted[6].

The targeting performance over time is mixed. Comparing the obtained results with those of Alderman (2001), which refer to a survey carried out in 1996, emerges that targeting has worsened[7]. Figure 2.1 shows that the targeting curve by decile was steeper in 1996 as compared to 2002 and 2005 indicating that the share of NE expenditure going to lower deciles was higher than the share going to upper deciles in 1996 as compared to subsequent periods[8]. Coverage and under-coverage rates and the targeting coefficient improved between 2002 and 2005 but this has been accompanied

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[6]The targeting coefficient, proposed by Galasso and Ravallion (2005) and reported in Tables 2.2 and 2.3, measures the difference between the proportions of the poor and the non-poor who receive receive the transfer. If the program is perfectly targeted to the poor then the index takes "1", while if the program perfectly target the non-poor then the index is "-1". Untargeted allocation is equal to "0".

[7]The survey used by Alderman (2001) is a different survey from those used in this study, but both sets of surveys are nationally representative and the same consumption indicator used by Alderman have been reconstructed.

[8]Consumption for all years is net of NE benefits.

Table 2.1: Poverty Analysis in 2002 and 2005

| Poverty incidence | 2002 | 2005 |
|---|---|---|
| Headcount Ratio (individuals)[a] | 24% | 18% |
| Headcount Ratio (households)[a] | 19% | 13% |
| Poverty Gap Index (individuals) [b] | 5% | 3% |
| Poverty Gap Index (households) [b] | 4% | 2% |
| Headcount Ratio without NE (individuals) | 25% | 19% |
| Headcount Ratio without NE (households) | 20% | 15% |
| Poverty Gap Index without NE (individuals) | 6% | 4% |
| Poverty Gap Index without NE (households) | 4% | 3% |

[a] Foster-Greer-Thorbecke poverty index, FGT(0).Headcount ratio (proportion of poor).

[b] Foster-Greer-Thorbecke poverty index, FGT(1).Average normalized poverty gap.

Table 2.2: *Ndihma Ekonomike*'s Coverage and Targeting

| | 2002 | 2005 |
|---|---|---|
| Coverage[a] | 11% | 12% |
| Adequacy[b] | 10% | 9% |
| Undercoverage (Cornia and Steward, 1995)[c] | 75% | 67% |
| Leakage (Cornia and Steward, 1995)[d] | 57% | 64% |
| Targeting Coefficient (Galasso and Ravallion, 2005)[e] | 0.167 | 0.230 |

[a] Percentage of NE beneficiaries on the population

[b] Average share of subside on beneficiary household's consumption

[c] Percentage of poor household not covered by the program

[d] Percentage of non poor among the beneficiary households

[e] Defined in Galasso and Ravallion (2005).The index is "-1" if the non-poor are perfectly targeted, "1" if the poor are perfectly targeted and "0" if there is no targeting.

Figure 2.1: *Ndihma Ekonomike*'s Targeting Perfomance Evolution
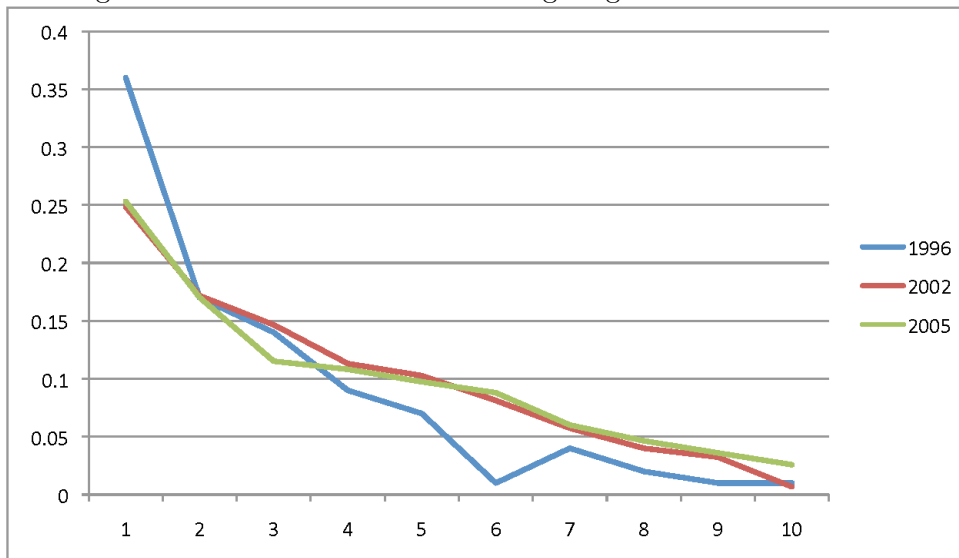


by an increase in leakage and a decrease in adequacy (Table 2.2)[9]. Figure 2.1 also shows that the share of NE expenditure going to the poor has marginally decreased between 2002 and 2005 especially for the third decile. The NE expenditure during this last period has declined by about 29% and this decline has not been pro-poor. In other words, between 2002 and 2005 improvements in coverage have been achieved at the expenses of leakage and adequacy. The program has been able to capture more poor households but expenditure per capita has got thinner overall and marginally thinner for poor households.

The targeting performance of the program may be explained in terms of several factors. First, funds may be misallocated with insufficient funds reaching poor areas and excessive funds reaching rich areas. The central NE budget allocation mechanism to local administrations determines *ex-ante* the funds available for local areas. Case (2001) found that political constituencies were an important factor in explaining budget allocations and Kolpeja (2006) has noticed that 15-20% of applications rejected are because of lack of funds. These two findings could explain a bias allocation of funds in favour of richer areas. Such problems are generally difficult

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[9]My results on coverage, leakage and targeting coefficient agree with those published in WB (2007).

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to address but can be improved if the design of the budget allocation criteria are demanded to an independent body.

Second, the targeting mechanism in place may not be able to target the poor efficiently, even if perfectly implemented. Means-testing is only one of the criteria used to select households, selection is based on income rather than consumption and the program has no proxy-means tests in place. Program administrators do not have the same information available in surveys to measure poverty and this may partly explain the targeting ratios estimated with surveys data on consumption. This problem can be addressed by introducing proxy-means tests based on household surveys to complement or replace the means-test formula.

Third, administrators may not be able to apply the targeting mechanism properly. This may be due to supply side reasons such as difficulties in administrative procedures, collection of documents or misbehaviour on the part of administrators or demand side reasons such as fraudulent behaviour or lack of information on the part of clients. Alderman (2002) found that the information available to local administrators improved the targeting capacity of the program. WB (2007) decomposed the targeting coefficient reported in Table 2.2 into intra-commune and inter-commune components and found that two thirds of the targeting coefficient is explained by the intra-commune component. The performance of program administrators within communes seems to be more relevant than differences across communes (as evidenced by the heterogeneity in district targeting performances shows in Table 2.3). The 2005 program reform reduced the freedom of choice of local administrators. This may be a good or bad factor depending on how good local administrators were in the first place. The results indicate an improvement in the targeting coefficient between 2002 and 2005 together with a growth in leakage and a reduction in adequacy, a rather mixed picture. Nevertheless, the targeting capacity of administrators can be improved with a combination of training, public information campaigns and anti-corruption measures.

Fourth, targeting during a recession phase may be different from targeting during a growth phase. During a recession public resources are scarcer while poverty is widespread. With more poor it is easier to catch the poor although transfers may be low. Different is the outlook during a growth phase. With more money and less poverty it is easier to spread money around increasing coverage and leakage at the same time. Albania acted counter-cyclically with a 29% drop in NE program

Table 2.3: Targeting Coefficients by District

| District | Targeting Coefficient in 2002 | Targeting Coefficient in 2005 |
|---|---|---|
| BERAT | 0.359 | 0.354 |
| BULQIZE | 0.071 | 0.282 |
| DELVINE | 0 | 0 |
| DEVOLL | 0 | 0.19 |
| DIBER | 0.273 | 0.23 |
| DURRES | 0.064 | -0.008 |
| ELBASAN | 0.020 | 0.177 |
| FIER | 0.098 | 0.138 |
| GJIROKASTER | -0.032 | 0.195 |
| GRAMSH | 0.194 | 0.094 |
| HAS | 0.636 | 0.409 |
| KAVAJE | 0.063 | 0.235 |
| KOLONJE | 0 | -0.133 |
| KORJE | 0.208 | 0.377 |
| KRUJE | 0.227 | -0.03 |
| KUKES | 0.404 | 0.208 |
| KURBIN | 0.219 | 0.196 |
| KUkOVE | 0.256 | 0.147 |
| LEZHE | -0.032 | 0.018 |
| LIBRAZHD | 0.149 | 0.231 |
| LUSHNJE | 0.068 | 0.109 |
| MALESI E MADHE | 0 | 0.1 |
| MALLAKASTER | 0.256 | -0.025 |
| MAT | 0.100 | 0.404 |
| MIRDITE | 0.103 | 0.342 |
| PEQIN | 0.196 | 0.589 |
| PERMET | 0 | 0 |
| POGRADEC | 0.361 | 0.297 |
| PUKE | -0.034 | 0.431 |
| SARANDE | 0.311 | 0.456 |
| SHKODER | 0.116 | 0.303 |
| SKRAPAR | 0.600 | 0.444 |
| TEPELENE | 0.203 | 0.7 |
| TIRANE | 0.065 | 0.194 |
| TROPOJE | 0.328 | 0.045 |
| VLORE | 0.132 | -0.013 |

allocations in real terms between 2000 and 2006 (WB, 2007) and achieved higher coverage and leakage by reducing average transfers per household. The expenditure reduction may be partly explained by a reduction in needs and applications to the program during the growth phase but the reduction in expenditure per household is hardly a pro-poor policy. This is another aspect of the program that can be improved.

## 2.4 Data and variables

The available data used for the evaluation of the NE program are two rounds of the Albanian Living Standards Measurement Survey (LSMS), 2002 and 2005. These

data contain information on income and cash transfers divided by program as well as sections on labor participation, migration and household assets, allowing to identify the NE transfer with precision and also recover the variables used for eligibility. The 2002 and 2005 surveys covered 3,599 and 3,640 households respectively, employed the same questionnaire and the same sampling procedure and estimates from the two samples are fully comparable. The surveys include also a community questionnaire with information on local services and socio-economic conditions[10]. It helps in order to control for community fixed effects and to determine the behavioural traits of administrators otherwise unobserved.

To strictly reproduce assignment process, an household's threshold is compute with the formula reported above, subtracting declared household's. A dummy variable "eligible" is defided to take value "1" if the household is eligible on the basis of the means testing formula. It was possible to define dummies for exclusion criteria for both years: exclusion if one household's member is employed, exclusion if one is abroad for reason different from studying and receiving health care, exclusion if there are properties different than land, exclusion if one unemployed member is not registered to the local labour office and a dummy for urban/rural residence. The local official discretionality has been measured using the methodology proposed by Galasso and Ravallion (2005) as proxy of good local governance. The targeting coefficient measures the difference between the proportions of the poor and the non-poor who receive receive the transfer. If the program is perfectly targeted to the poor then the index takes "1", while if the program perfectly target the non-poor then the index is "-1". Untargeted allocation is equal to "0".The coefficient has been measured by district since the survey contains an average of only eight household per municipality/communes, clearly too few to construct a municipality's targeting index. In Albania there are 36 districts. In the sample, each district is composed of, on average, seven municipalities or communes. Table 2.3 reports targeting coefficients for each Albania's district, showing a large variability of targeting performance along the country.

The study is concerned with the welfare improving capacity of the NE program, hence the chosen outcome variable is a measure of welfare. Following a standard practice in similar studies, per-capita household expenditure normalized by an abso-

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[10]Note that the community questionnaire is not administrated at municipality/communes level, but at a smaller territorial unit such as rural villages or urban blocks.

lute poverty line is used (Ravallion et al., 1995; Van de Walle, 2003). The aggregate consumption and the poverty line are calculated by the WB and contains the following components: food consumption (both purchased and consumed from own production), non food expenses (clothing, household articles etc.), utilities (gas, telephone, electricity, etc), education, and durables. The poverty line comes from the basic needs methodology (Ravallion and Bidani, 1994).

The outcome's explanatory variables are: household characteristics as age, education and health of the household's head plus family composition (proportion of working age members, number of children); local environmental variables influencing consumption, as the availability of local services and dummies for districts; proxy of economic status, chosen as the share of working members within the household.

## 2.5    Evaluation strategy

Evaluation strategies in program evaluation are mainly a way to deal with a missing data problem: counterfactual outcomes from program's participants. In order to perform a consistent evaluation of a specific program one should observe the outcomes of the participants in case they would not receive the benefit. Since this is impossible for obvious reasons, program evaluation literature seeks to find a way to predict missing data on counterfactuals. Thus in order to evaluate a program, non-participants outcomes can be used as counterfactual and the challenge of evaluation is how to minimize the bias, namely the differences between participants and non-participants, due to observables and unobservable variables. This means to measure the gain from moving an individual from the state "without treatment" to the state "with treatment". The program evaluation literature has focused indeed mainly in the estimation of the effects of the program on outcomes of program participants, assuming that the indirect effects of non participant are negligible (Todd, 2008). This assumption held in particular when a non-contributive anti-poverty program financed by the government is evaluated.

In this study, $Y_{0t}$ and $Y_{1t}$ are the two potential welfare outcome, household expenditure normalized by an absolute poverty line, for each household $i$ in 2002 and 2005. $T$ is the binary variable of treatment assuming "1" if the household receive the NE benefit and "0" if does not get it, while $X$ is a vector of household attributes. It is not possible to compute directly the difference between the two outcomes since the

potential welfare $Y_0$ is not observed, non-participants outcome is used as counterfactual, the problem of selection bias arises. In fact, the assignment of the Albanian program is based on a means testing targeting with a designed process of placement and it is likely to have selection bias when comparing outcomes between participants and non-participants. The most robust way to solve this problem would be using data from a social experiment. A social experiment if properly designed would aim at randomize placement, such that all households would have *ex-ante* the same chance to get the benefits (LaLonde, 1986; Heckman et al., 1998a). Unfortunately, randomized data are not available, hence to consistent compare NE beneficiaries with the non recipient households and to compute the treatment effects an alternative technique must be used. In this case, the decentralized program management is an additional source of potential bias that may cause municipality fixed effects, possibly related to their targeting efficiency. One way to solve this problem could be to eliminate time-invariant bias, as community's fixed effects, using pre-intervention data but since the program ha been introduced for the first time in 1993, this is not possible with the available data.

Let $T = 1$ define individuals treated by the program and $T = 0$ individuals non treated by the program under study. Let also $Y_1$ be the potential outcome in the treated state and $Y_0$ the potential outcome in the untreated state. There are two possible potential outcome states for each of the two groups, treated and non-treated. The main parameter of interest in program evaluations is the *Average impact of Treatment on the Treated* (ATT):[11]

$$ATT = E(Y_1 - Y_0 | T = 1) \tag{2.1}$$

The central problem in program evaluation is that the potential outcomes of the treated $Y_1$ and $Y_0$ cannot be observed simultaneously. There is a missing data problem and an evaluation strategy able to overcome the missing data problem, given a set of available data, is needed. When the researcher disposes of a random experiment designed *ex-ante*, the treated group can be considered as a representative sample of

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[11]See Rosenbaum and Rubin (1985) or Heckman and Robb Jr (1985). Note that the program evaluation literature has focused mainly on program participants assuming that the indirect effects on non participant are negligible (Todd, 2008). This assumption is not always true but generally holds with non-contributive anti-poverty program financed by general taxation, which is the case of the NE program.

the population and the estimation of the ATT boils down to the difference between the observed outcome of the treated and the observed outcome of the non-treated in the post-treatment phase:

$$ATT = E(Y_1|T=1) - E(Y_0|T=0) \tag{2.2}$$

In the present case, a random experiment is not available and a simple comparison of the post-treatment outcomes of the treated and non treated groups would result in a bias estimate of the ATT.

Resuming, program participation in NE is based on a number of criteria that self-select into the program only households with certain characteristics and this generates a selection bias. An additional source of potential bias is the decentralized program management that may introduce unobserved selection practices into the program. Moreover, since a baseline survey is not available, a proper control group must be detected before estimating the treatment effect.

In a non-experimental setting, reducing the bias is essential for obtaining efficient ATT estimates. In particular, desirable features of non-experimental methods are that (Heckman et al., 1997): (1) Participants and controls have the same distributions of unobserved attributes; (2) The two groups have the same distribution of observed attributes; (3) The same questionnaire is administered to both groups; and 4) Participants and controls are placed in a common economic environment[12]. Feature (1) requires the conditional independence assumption whereby the potential outcome from non participation $Y_0$ is independent of program participation conditional on a vector of observed variables $X$ ($Y_0 \perp T|X$). Feature (2) can be achieved with a process of matching on observables. Feature (3) can be achieved by using the comparison group within the same survey used to observe the treated group or by using an identical survey with the same questionnaire[13]. And feature (4) can be achieved by controlling for local areas during the matching process.

In this study, the treated conterfactual outcomes from the comparison group of non treated individuals are found within the same survey used to observe the treated group. This ensures that the questionnaire administered to both groups is

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[12]The experimental evidence in Michalopoulos et al. (2004) reinforces this assumption.

[13]Note that the questionnaire is almost identical for 2002 and 2005 for the variables used in this study

the same, which satisfies feature (3). To control for features (2) and (4), the chosen strategy is to exploit a matching process based on observables for selection criteria and variables related to community-based targeting. Thus, the main problem to address is the question of distribution of unobserved attributes for the treated and non treated groups, for which some further assumptions are necessary. However, Heckman et al. (1997) have shown that, if conditions (2), (3) and (4) are met, the bias arising from a failure of condition (1) may not be a major problem.

In non-experimental studies, condition (1) requires the conditional independence assumption where $Y_0$ and $Y_1$ are independent of $T$ conditional on $X$ - $(Y_0, Y_1) \perp T|X$. If this condition is met, the ATT can be estimated simply comparing participants with non participants. Furthermore, with $P(X) = Pr(T = 1|X)$ and $0 < P(X) < 1$ for all $X$, the ATT is defined for all values of $X$ and experimental and non-experimental evaluations can be said to identify the same parameters. These two assumptions are known as the "strong ignorability" assumptions following Rosenbaum and Rubin (1983). In fact, if ATT is the only parameter of interest, it is sufficient for $Y_0 \perp T|X$ to hold given that the ATT measures the impact on the treated only.

Rosenbaum and Rubin (1983) also showed that the strong ignorability assumptions imply $Y_0 \perp T|(P(X))$ which suggests that matching can be performed on $P(X)$ rather than on $X$. Based on these findings, Heckman et al. (1998) derived that for the estimation of the ATT is sufficient a weaker identifying assumption described as $E(Y_0|P(X), T = 1) = E(Y_0|P(X), T = 0)$. Now, partitioning the $X$ vector of variables into a vector of variables used in program selection $Z$ and a vector of variables used for the outcome equation $W$ and considering the econometric specifications of the outcome variable ($Y_{(.)} = \beta X_{(.)} + U_{(.)}$), it is possible to re-write the basic matching assumptions in terms of residuals as $E(U_0|W, Z, T) = E(U_0|Z, T)$ and $E(U_0|P(Z), T = 1) = E(U_0|P(Z), T = 0)$. These are weaker assumptions than the strong ignorability assumptions and they can be used to construct alternative matching estimators.

The problem of this choice is that finding good matches of the treated in the pool of non-treated may be difficult due to self-selection. However, a combination of factors specific to the Albanian LSMS data ensures that this is not the case. Among the pool of non treated individuals it is common to find eligible households who did not apply to the program and eligible households who applied to the program but were rejected. According to Kolpeja (2006): *"The number of applicants for NE is much*

*higher than those who receive the benefit. Some estimations indicate that about 30-35 percent of applications are rejected. The reasons for the refusal of NE benefit are: a) incompatibility with (eligibility) criteria (about 5 percent), insufficient funds (15-20 percent), and c) provision of false information (10 percent)."* Moreover, the pool of treated household contains also non-eligible households. In substance, program leakage and under-coverage ensure that among the treated and non treated groups comparable households can be found. Indeed, the matching procedure achieves full common support.

The condition (4) is addressed by controlling for local areas using a territorial dummy variable which ensures that matching takes into account the local economic environment. The territorial variable selected is the district. Albania is a small country of about 28,000 squared kilometers divided into 36 districts. The average size of a district is a reasonable reasonable to represent local labour markets. Smaller territorial units were also difficult to use in the regressions due to sample size limitations. In addition, the participation equation includes a dummy for urban and rural areas capturing the different features of urban and rural labour markets.

The question of selection on observables (3) is generally addressed with a process of matching where a comparison group for the treated is constructed from a group of non treated based on common observed characteristics. Following the discussion above, this study applies a regression adjusted local linear matching ($R - LLM$ for short). This method was implemented by Heckman et al. (1997) and formally justified in Heckman et al. (1998b). It consists of estimating matched outcomes for the treatment group combining a local linear matching on the covariates of eligibility with a regression-adjustment on the covariates of outcome. Single differences in mean outcomes are used to compute $ATT$ for the two years separately and then estimate the Conditional Difference-in-Differences ($DID$) between the two years in order to evaluate the policy intervention. For the single difference estimations, it is first necessary to compute the conterfactual outcomes using a matching procedure based on propensity scores. Single differences are based on the exogeneity assumption $E(Y_0|X, T = 1) = E(Y_0|X, T = 0)$.

When there is a detailed knowledge of the program assignment and clear eligibility variables are identifiable, it is also possible to restrict the exogeneity assumption to observables on program design only, separating these variables from the covariates of outcome. Heckman et al. (1997) found this exclusion restriction more efficient for

reducing selection bias than the standard practice of estimating predicted values on a set of mixed covariates. Hence, following this strategy, the $X$ vector of covariates is partitioned into a vector $W$ of variables to be used for the outcome equations (described in the 'results' section) and a vector $Z$ of eligibility variables for the participation equation (this vector includes all categorical and means-testing eligibility variables described before).

By partitioning the variables into the $W$ and $Z$ vectors and invoking the exclusion restrictios of eligibily variables and outcome variables, it is possible to estimate single differences for each of the two years using a regression adjusted matching procedure. The procedure implies the following steps: 1) Estimation of the predicted values of participation based on the $Z$ vector of variables and creation of a variable of predicted values "pscore"; 2) Estimation of the predicted values of welfare using a conventional econometric model based on the $W$ vector of variables and creation of a variable of predicted residuals "res"; 3) Propensity score matching using "res" as outcome variables and "pscore" as propensity scores for matching; 4) Estimation of the single mean difference in outcomes. In this way, a consistent estimate of the $ATT$ for 2002 and 2005 is obtained. Here the exogeneity assumption of the outcome's residuals holds[14] conditional to the vector $Z$ and the treatment status: $E(U_0|P(Z), T = 1) = E(U_0|P(Z), T = 0)$. The assumption should be verified since the distribution of the residuals of welfare index (normalized consumption) are not in principle influenced by the eligibility variables used in the computation of the propensity score.

The conterfactual outcomes are estimated using a non-parametric estimation based on a local linear regression which uses and weights all comparison group observations. Advantages of this non-parametric matching are the follows. Lower variance is achieved and more information is used since the method allow the inclusion of all non-participant as a control group. Local polynomial regression instead of a standard kernel, fits more properly with the data actual distribution and has a faster rate of convergence near boundary points (this is a very desirable property since a large part of the data is concentrated at boundaries). Moreover, according to Caliendo and Kopeinig (2008) local linear regression is expected to perform better than kernel estimation when the non-participants observations on $P(Z)$ fall on one side of the

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[14]The general conditional exogeneity assumption is applied to residuals because of the "exclusion restrictions"

participant observations, which is the case of the propensity score distribution estimated in the participation equation (Figure 2.2). The local linear matching estimator is defined as:

$$\hat{\alpha} = \frac{1}{n_1} \sum_{i \epsilon I_1 \cap S_p} [U_{1i} - \sum_{j \epsilon I_0 \cap S_p} W(i,j)U_{0j}] \tag{2.3}$$

where $I_1$ is the set of participants, $I_0$ the set of non-participants, $S_p$ is the region of common support and $n_1$ is the number of individuals in the set $I_1 \cap S_p$. The match of each participant is constructed as a weighted average over the outcomes of non-participants where $W(i,j)$ is computed by a local linear weighting function on the distance between $P_i$ and $P_j$:

$$W(i,j) = \frac{G_{ij} \sum_{k \epsilon I_0} G_{ik}(P_k - P_i)^2 - [G_{ij}(P_j - P_i)][\sum_{k \epsilon I_0} G_{ik}(P_k - P_i)]}{\sum_{j \epsilon I_0} G_{ij} \sum G_{ij}(P_k - P_i)^2 - (\sum_{k \epsilon I_0} G_{ik}(P_k - P_i))^2} \tag{2.4}$$

A fixed bandwidth of 0.06 and a bi-weight kernel $G(.)$ are used for the estimation. Common support conditions imposed because $S_p$ needs to be determined to compute $\hat{\alpha}$ (2.3). Moreover, to ensure that the propensity score density under the common support is strictly positive, a trimming procedure is also applied, excluding any P point for which the estimated density is zero and the two percent of the remaining P points for which the estimated density is positive but relatively small.

Based on the *ATT* estimations for 2002 and 2005, it is then possible to estimate the difference-in-difference. Heckman et al. (1997, 1998a) have shown that with panel or repeated cross-section data it is possible to adopt weaker conditional independence assumptions using a difference-in-differences estimator of the type $DID = E(Y_{1t} - Y_{0t'}|X, T = 1) - E(Y_{0t} - Y_{0t'}|X, T = 0)$, where $t$ and $t'$ represent time after treatment or the change in treatment and before treatment respectively. In fact, it is sufficient for $E(Y_{0t} - Y_{0t'}|X, T = 1) = E(Y_{0t} - Y_{0t'}|X, T = 0)$ to hold. Under additive separability and index sufficiency, this condition becomes $E(U_{0t} - U_{0t'}|P(Z), T = 1) = E(U_{0t} - U_{0t'}|P(Z), T = 0)$. In substance, the DID estimator does not require $E(U_0|X, D = 0)$ and allows for unobservable but time-invariant differences in outcomes between matched NE beneficiaries and non-

beneficiaries. The DID is estimated as:

$$\hat{\alpha}_{DID} = \left\{ \frac{1}{n_{1t}} \sum_{i \epsilon I_{1t} \cap S_p} \left[ U_{1ti} - \sum_{j \epsilon I_{0t} \cap S_p} W(i,j) U_{0tj} \right] \right\} \qquad (2.5)$$

$$- \left\{ \frac{1}{n_{1t'}} \sum_{i \epsilon I_{1t'} \cap S_p} \left[ U_{1t'i} - \sum_{j \epsilon I_{0t'} \cap S_p} W(i,j) U_{0tj} \right] \right\}$$

This estimation is used to evaluate the marginal impact of the policy intervention occurred between 2002 and 2005. Note that between 2002 and 2005 Albania experienced rapid growth and poverty reduction, the DID matching can isolate the impact of the program from the impact of growth because the matching is performed for both years, hence comparing individuals equally affected by economic growth.

## 2.6  Results

### 2.6.1  Participation into the program

The participation equation (Table 2.4), which models faithfully the program design and is used for propensity score estimation, shows that the major role is played by the means testing procedure and by the district targeting performance in 2002 and 2005. It was not possible to include all the eligibility criteria as independent variables because of the need to find a specification able to fulfill the balancing property of the covariates and to have a model with a high prediction power according to the hit or miss method[15]. The final decision was to keep the most relevant dummies for eligibility criteria and to construct dummies for local targeting performance measured with the targeting index proposed by Galasso and Ravallion (2005) and described in the previous section. The dummy variables local targeting efficiency are computed using the quintiles of the targeting coefficient distribution in the propensity score specification. The final specifications allowed to reach a good prediction rates for both years (columns 1 and 2 of Table 2.4) and for the different sub-samples (columns 3 to 6 of Table 2.4). The remaining randomness in the R-squared values of Table 2.4 is probably due to targeting failures not captured by the targeting coefficient. This

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[15]The method classifies an observation as "1" if the estimated pscore is greater than the sample proportion of eligible persons takink the subsidy and "0" otherwise (Breiman et al., 1984)

Table 2.4: Probit Regression for Program Participation

| | (1) 2002 | (2) 2005 | (3) 2002 no-leakage | (4) 2005 no-leakage | (5) 2002 only poor hh | (6) 2005 only poor hh |
|---|---|---|---|---|---|---|
| Dummy for means testing | 0.799*** | 1.059*** | 0.946*** | 1.336*** | 0.714*** | 1.038*** |
| | (0.075) | (0.092) | (0.104) | (0.123) | (0.157) | (0.176) |
| Dummy for hh employment | -1.122*** | -0.828*** | -0.938*** | -0.602*** | -1.031*** | -0.438* |
| | (0.126) | (0.103) | (0.200) | (0.160) | (0.259) | (0.250) |
| Dummy for migration | 0.044 | -0.056 | -0.039 | -0.087 | -0.132 | -0.389* |
| | (0.092) | (0.114) | (0.127) | (0.175) | (0.177) | (0.235) |
| Dummy for hh no-land properties | 0.024 | -0.114 | 0.088 | -0.283* | 0.237 | -0.009 |
| | (0.110) | (0.095) | (0.161) | (0.154) | (0.228) | (0.247) |
| Dummy for urban residence | 0.496*** | -0.294*** | 0.363** | -0.388*** | 0.740*** | 0.196 |
| | (0.104) | (0.088) | (0.163) | (0.148) | (0.235) | (0.246) |
| District's targeting coefficient (bad) | -0.498*** | -0.609*** | -0.369** | -0.547*** | -0.734*** | -0.778*** |
| | (0.103) | (0.092) | (0.150) | (0.166) | (0.205) | (0.218) |
| District's targeting coefficient (good) | 0.424*** | 0.310*** | 0.684*** | 0.561*** | 0.626*** | 0.504*** |
| | (0.085) | (0.075) | (0.111) | (0.113) | (0.159) | (0.177) |
| Constant | -1.605*** | -1.155*** | -2.313*** | -1.873*** | -1.406*** | -0.547*** |
| | (0.086) | (0.074) | (0.121) | (0.115) | (0.181) | (0.178) |
| Observations | 3599 | 3638 | 3302 | 3271 | 737 | 502 |
| Pseudo R-Squared | 0.165 | 0.141 | 0.229 | 0.224 | 0.195 | 0.210 |
| Prediction Capacity | 88.95 | 79.01 | 85.96 | 74.43 | 82.46 | 72.73 |

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 2.2: Propensity Score Distributions by Treatment Status in 2002 and 2005
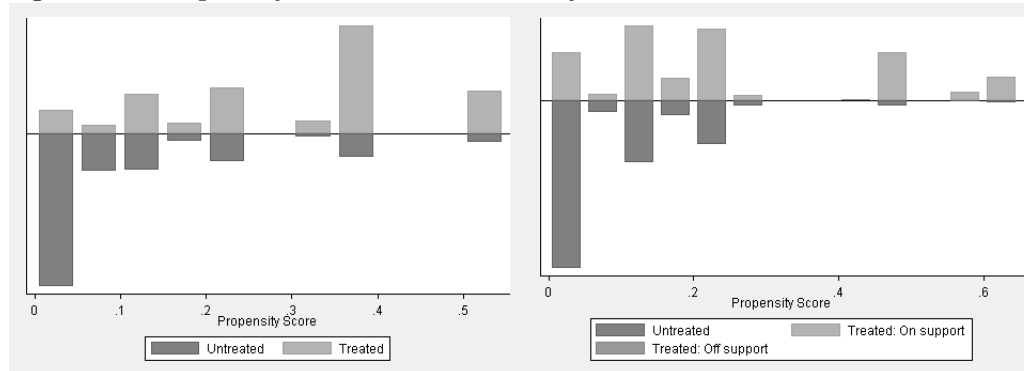


also suggests that the group of non treated households contains many potentially eligible households, a useful feature when it comes to matching.

In order to verify how targeting failures affect program performance, program participation have been modeled using two different sub-samples: one netted of bad targeted households (non-poor receiving the subsidies - columns 3 and 4 of Table 2.4) to simulate perfect targeting, and the other made of only poor households (columns 5 and 6 of Table 2.4). The significance of coefficients remains almost constant for the different samples. For all equations (columns 1 to 6 of Table 2.4) reasonably high prediction rates could be reached.

Table 2.5 reports the results of OLS outcome equations used for in the regression-adjustment for the same three samples considered in Table 2.4. Important factors explaining welfare are health and education of the head of the household and household composition, especially the presence of economically active members and children. The R-squared suggest that these variables explain more than a third of the variance of the outcome variable for the first two samples (columns 1-4) and about 16% for the sub-sample of poor households (columns 5-6).

## 2.6.2 The estimation of ATTs using R-LLM and DID

Table 2.6 reports the ATTs estimated with R-LLM and DID. For the matching common support and 2% of trimming rule in determining the overlapping support region are imposed. Trimming drops only one treated observation in 2002 and ten treated observations in 2005.

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Table 2.5: OLS Estimates on Normalized Consumption Used for the Residuals' Computation

| | (1) 2002 | (2) 2005 | (3) 2002 no-leakage | (4) 2005 no-leakage | (5) 2002 only poor hh | (6) 2005 only poor hh |
|---|---|---|---|---|---|---|
| Age of the hh head | -0.000 | -0.020 | 0.002 | -0.024* | -0.012*** | -0.004 |
| Age of the hh head (squared) | -0.000 | 0.000 | -0.000 | 0.000* | 0.000*** | 0.000 |
| Head (1) is in good health | 0.088** | 0.085 | 0.095** | 0.073 | 0.022 | 0.051** |
| HH head-primary school | 0.006 | -0.184** | 0.003 | -0.200* | -0.006 | 0.010 |
| HH head-two years vocational | 0.290*** | 0.144 | 0.317*** | 0.167 | 0.031 | 0.046 |
| HH head-five years vocational | 0.072 | -0.027 | 0.064 | -0.033 | 0.065 | 0.014 |
| HH head-general secondary | 0.272*** | 0.204* | 0.273*** | 0.212* | 0.057** | 0.004 |
| HH head-university degree | 0.707*** | 0.760*** | 0.698*** | 0.762*** | 0.049 | 0.018 |
| HH head-postgraduate | 0.845*** | 1.566*** | 0.836*** | 1.558*** | | |
| Share of working age members | 0.659*** | 0.755*** | 0.659*** | 0.754*** | 0.148*** | 0.059 |
| HH has 1 under five child | -0.386*** | -0.393*** | -0.401*** | -0.413*** | -0.082*** | -0.040** |
| HH has 2 under five children | -0.737*** | -0.815*** | -0.756*** | -0.879*** | -0.135*** | -0.097*** |
| HH has 3 or more under five children | -0.931*** | -0.847*** | -0.965*** | -0.884*** | -0.153*** | -0.066 |
| HH has 1 child (6-18) | -0.419*** | -0.302*** | -0.433*** | -0.289*** | -0.002 | -0.060** |
| HH has 2 children (6-18) | -0.641*** | -0.493*** | -0.657*** | -0.495*** | -0.036* | -0.074*** |
| HH has 3 children (6-18) | -0.881*** | -0.666*** | -0.906*** | -0.689*** | -0.083*** | -0.061** |
| HH has 4 or more children (6-18) | -1.047*** | -0.917*** | -1.091*** | -0.988*** | -0.143*** | -0.133*** |
| Pre-school exists in the community | -0.018 | 0.210* | -0.026 | 0.196 | 0.010 | 0.073** |
| Primary school exists in the community | 0.030 | -0.052 | 0.029 | -0.040 | -0.008 | 0.060** |
| Secondary school exists in the community | -0.015 | -0.126** | -0.016 | -0.124** | -0.025 | -0.042* |
| Ambulatory exists in the community | 0.101** | 0.043 | 0.108** | 0.060 | 0.006 | -0.033 |
| Hospital exists in the community | 0.028 | -0.223*** | 0.025 | -0.220*** | 0.002 | -0.004 |
| Bank exists in the community | 0.124** | 0.000 | 0.117** | -0.018 | 0.004 | 0.000 |
| Credit cooperative exists in the community | 0.009 | -0.092 | -0.000 | -0.154 | 0.043 | -0.039 |
| District fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 2.054*** | 2.666*** | 2.030*** | 2.838*** | 1.127*** | 0.847*** |
| Observations | 3599 | 3638 | 3302 | 3271 | 737 | 502 |
| R-squared | 0.322 | 0.287 | 0.328 | 0.290 | 0.293 | 0.268 |

*** p<0.01, ** p<0.05, * p<0.1

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Table 2.6: *ATT* Estimations

|  | 2002 (1) | 2005 (2) | no-leakage 2002 (3) | 2005 (4) | only poor 2002 (5) | 2005 (6) |
|---|---|---|---|---|---|---|
| R-LLM | -0.183*** (0.029) | -0.286*** (0.052) | -0.302*** (0.038) | -0.501*** (0.060) | 0.002 (0.014) | -0.039*** (0.015) |
| DID | -0.133*** (.038) | | -0.081 (.064) | | -0.011 (.011) | |
| Observations | 3599 | 3640 | 3302 | 3273 | 737 | 502 |

Bootstrapped standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Average treatment effects for the treated (ATTs) are negative for both years indicating a negative impact of the program on welfare[16]. The negative effect is also rather large, around a third of the value of the poverty line for the whole sample in 2002 and 2005. The impact of the program also worsens over the period suggesting that changes introduced to the program have not been beneficial, even though targeting is not clearly worsened. Performing the evaluation eliminating the "error II" households, leads to an even stronger negative impact. For poor households the program seems to haves no impact in 2002 and a negative impact in 2005.

To test the robustness of the results, the estimation is repeated using consumption per adult equivalent rather than consumption per capita, and four alternative poverty lines (60%, 80%, 120% and 140% of the official poverty line), as shown in Table 2.7. Results are very consistent in showing a negative value for both years. However, the size of the impact changes significantly when the poverty line changes. For example, with a very low poverty line (60% of the official poverty line) the negative impact of the program is twice as large as the one estimated with a very high poverty line (140% of the poverty line). The DID estimates are also all negative when using equivalence scales (Table 2.7).

As a final analysis, a stochastic dominance analysis is performed to assess the distributional impact of treatment. Stochastic dominance of first degree can be assessed by comparing the cumulative distribution functions (CDFs) of the outcome variable for the treated and control groups. Figures 2.3 plot the welfare index curves

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[16]The standard errors are generated using a bootstrap re-sampling method instead of using the formulae derived in Heckman et al. (1998b). Bootstrapping can be safer when kernel or local linear estimators are used

Table 2.7: Sensitivity Analysis in ATTs Estimation

| | Equivalized Consumption | | 60% of poverty line | | 80% of poverty line | | 120% of poverty line | | 140% of poverty line | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | 2002 | 2005 | 2002 | 2005 | 2002 | 2005 | 2002 | 2005 | 2002 | 2005 |
| R-LLM | -0.229*** | -0.421*** | -0.499*** | -0.720*** | -0.374*** | -0.540*** | -0.250*** | -0.360*** | -0.214*** | -0.309*** |
| | (0.025) | (0.043) | (0.042) | (0.049) | (0.036) | (0.035) | (0.024) | (0.027) | (0.022) | (0.025) |
| DID | | -0.192*** | | -1.219*** | | -0.166*** | | -0.250*** | | -0.095*** |
| | | (0.049) | | (0.064) | | (0.050) | | (0.036) | | ( 0.033) |
| Observations | 3599 | 3640 | 3599 | 3640 | 3599 | 3640 | 3599 | 3640 | 3599 | 3640 |

Bootstrapped standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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Figure 2.3: Stochastic Dominance Treated Outcome versus Conterfactual Outcome
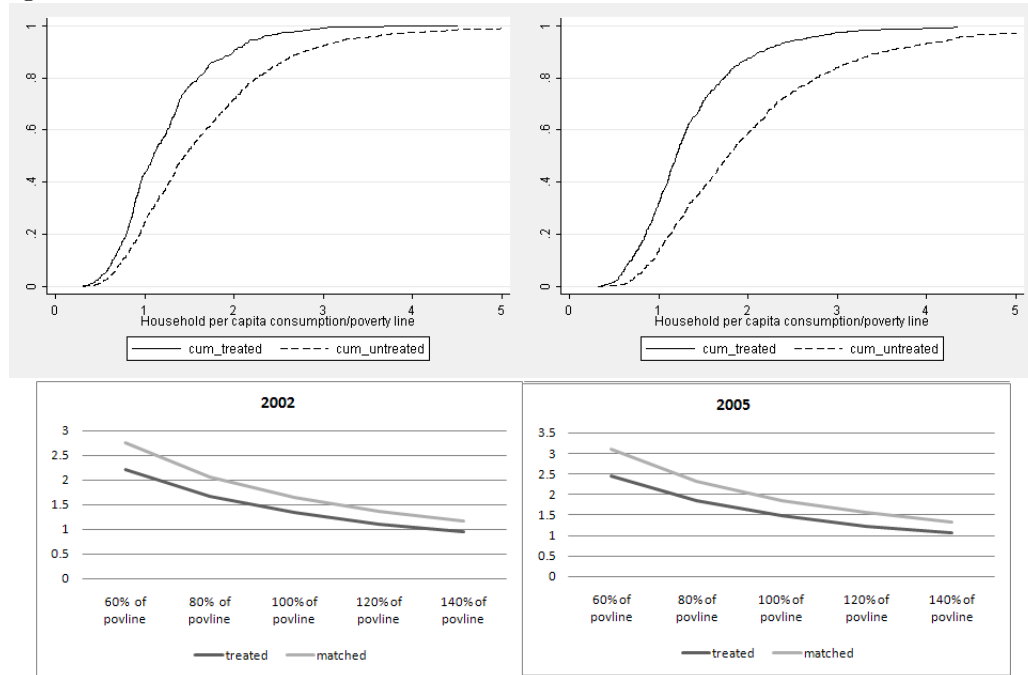


and the cumulative distribution functions of outcomes for the treated and control groups. The first shows the average welfare index with different poverty lines while the cumulative distribution functions depict the cumulate share of population population by consumption level sorted in ascending order. As shown by Foster and Shorrocks (1988), these two graphs provide the same information and can be used to establish poverty dominance of first degree. The gap between the two lines in each figure represents the program's impact. From Figures 2.3, it is evident that the gap is always negative for all poverty lines (the curves never cross) and that the gap is higher for low poverty lines. In other words, the impact of the program seems worse for the very poor.

T-tests for means of eligibility variables equality between treated and control groups are reported in Tables 2.8 and 2.9. T-tests are based on a regression of the variable on a treatment indicator. Before matching, this is an unweighted regression on the whole sample, after matching the regression is weighted using the matching weight variable and based on the "common support". It was not possible to reject the null hypothesis of equality of means for all the covariates in both years. Tables 2.8

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Table 2.8: T-tests for Means Equality - 2002 Matching

| Variable | Sample | Mean of treated | Mean of controls | %bias | % bias reduction | t-statistic | p-value |
|---|---|---|---|---|---|---|---|
| Dummy for mean testing | Unmatched | 0.662 | 0.203 | 104.5 | | 23.50 | 0.000 |
| | Matched | 0.661 | 0.683 | -5.0 | 95.2 | -0.76 | 0.448 |
| Dummy for hh employment | Unmatched | 0.28 | 0.582 | -64.1 | | -13.16 | 0.000 |
| | Matched | 0.277 | 0.294 | -3.6 | 94.5 | -0.60 | 0.549 |
| Dummy for hh no-land properties | Unmatched | 0.447 | 0.585 | -27.9 | | -5.93 | 0.000 |
| | Matched | 0.445 | 0.46 | -2.9 | 89.5 | -0.47 | 0.638 |
| Dummy for migration | Unmatched | 0.207 | 0.135 | 19.2 | | 4.32 | 0.000 |
| | Matched | 0.208 | 0.241 | -8.7 | 54.4 | -1.27 | 0.204 |
| Good district's targeting | Unmatched | 0.102 | 0.401 | -73.2 | | -13.52 | 0.000 |
| | Matched | 0.103 | 0.128 | -6.2 | 91.6 | -1.27 | 0.205 |
| Bad district's targeting | Unmatched | 0.173 | 0.245 | -17.9 | | -3.63 | 0.000 |
| | Matched | 0.170 | 0.195 | -6.3 | 65.1 | -1.06 | 0.289 |
| Dummy for urban residence | Unmatched | 0.441 | 0.561 | -24.1 | | -5.12 | 0.000 |
| | Matched | 0.438 | 0.451 | -2.6 | 89.4 | -0.41 | 0.680 |

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## Table 2.9: T-tests for Means Equality - 2005 Matching

| Variable | Sample | Mean of treated | Mean of controls | %bias | % bias reduction | t-statistic | p-value |
|---|---|---|---|---|---|---|---|
| Dummy for mean testing | Unmatched | 0.285 | 0.047 | 67.4 | | 19.48 | 0.000 |
| | Matched | 0.276 | 0.275 | 0.1 | 99.8 | 0.02 | 0.988 |
| Dummy for hh employment | Unmatched | 0.383 | 0.596 | -43.7 | | -9.37 | 0.000 |
| | Matched | 0.375 | 0.401 | -5.3 | 87.8 | -0.88 | 0.380 |
| Dummy for hh no-land properties | Unmatched | 0.732 | 0.609 | 26.5 | | 5.51 | 0.000 |
| | Matched | 0.736 | 0.700 | 7.8 | 70.7 | 1.31 | 0.189 |
| Dummy for migration | Unmatched | 0.116 | 0.084 | 10.5 | | 2.37 | 0.018 |
| | Matched | 0.115 | 0.094 | 7.2 | 31.6 | 1.15 | 0.251 |
| Good district's targeting | Unmatched | 0.141 | 0.339 | -47.5 | | -9.29 | 0.000 |
| | Matched | 0.143 | 0.152 | -2.1 | 95.5 | -0.41 | 0.681 |
| Bad district's targeting | Unmatched | 0.141 | 0.339 | -47.5 | | -9.29 | 0.000 |
| | Matched | 0.143 | 0.152 | -2.1 | 95.5 | -0.41 | 0.681 |
| Dummy for urban residence | Unmatched | 0.355 | 0.583 | -46.9 | | -9.98 | 0.000 |
| | Matched | 0.354 | 0.401 | -9.5 | 79.7 | -1.57 | 0.116 |

and 2.9 report also the standardised bias before and after matching, together with the achieved percentage reduction. The standardised bias is the difference of the sample means in the treated and non-treated sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups as proposed in Rosenbaum and Rubin (1985). It can be seen that matching has greatly reduced the bias between treated and non treated groups and the remaining bias for the matched group is very small and non significant for all eligibility variables in both years.

After testing the balancing property in propensity score specification, the validity of "unconfondedness", which in the case of R-LLM is the assumption $E(U_0|P(Z), T = 1) = E(U_0|P(Z), T = 0)$, where $U$ are the residuals of the outcome variable "welfare", is also tested. This problem is addressed using the bounding approach proposed by Rosenbaum (2002). The results of the test on the presence of unobserved heterogeneity (hidden bias) between treatment and control cases show that it is reasonabe to assume that there is not hidden bias, and hence that the conditional independent assumption should hold[17].

### 2.6.3   Discussion and extensions

It is difficult to identify a clear and unique reason for these negative findings. The applied methodology is largely supported by the literature on non-exexperimental program evaluation and good quality data to model the exact program design are available. A negative $ATT$ of the antipoverty program in Albania could be attributable to labor supply distortions produced by this kind of safety net consistent with the concerns of Atkinson (1995) and Kanbur et al. (1994) on the behavioural effects of social security. This explanation is supported also by the fact that being employed is one of the exclusion criteria. Considering the relevance of the informal economy in the country, one can say that *ceteris paribus* the transfer limits the supply of informal labour and hence reduce welfare in the long run. This interpretation is in line with the theory but doubtful in the case of NE, where the benefit's level

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[17]The concern of possible influence of $Z$ on the residuals of the outcome is additionally addressed controlling for correlation with the single variable included in the vector $Z$: the results give correlation coefficients close to zero.

is rather small to be a wage substitute[18]. However female's labour supply is usually more elastic than male's and even the small amount provided by the program could discourage female's work. Dabalen et al. (2008) find such an evidence but it should be stressed that a highly informal labour market such as the Albanian one could hardly be represented by a standard labour supply model.

One can attribute the negative effect also to targeting failures. However, excluding the poorly targeted households from the analysis, the impact is still high, negative and raises remarkably between 2002 and 2005. Focusing exclusively on those targeted households who are effectively poor (according to the surveys), the impact of the program is found to be close to zero in 2002 but negative in 2005. The issue is probably due to weak design of the program and the choice of the means testing formula, which may not be adequate. It could be that the formula is poorly designed and cannot capture the real poor or that the formula is hard to apply in practice because of malpractices, frauds or corruption. Indeed, as noted in Table 2.4, district targeting performance plays an important role for participation. In any case, the negative impact could probably be attributed to several factors combined.

A good tool to provide precise recommendations about the policy design of an anti-poverty program would be a (behavioural) microsimulation model (Bourguignon and Spadaro, 2006), which would allow to evaluate at the micro level the impact of any hypothetical reform. Clearly, an ambitious project as building a microsimulation model for Albania, is beyond the aims of this analysis.

## 2.7  Concluding remarks

This chapter has evaluated the poverty reduction capacity of the *Ndihma Ekonomike* program in Albania. The programme is one of the earliest poverty reduction program implemented in transitional economies and had a positive record in terms of targeting during the 1990s (Alderman, 2002). More recently, the program was found to have a negative effect on poverty and life satisfaction (Dabalen et al., 2008).

The targeting performance of the programme has revealed to be weak and to have worsened compared to the 90s. Between 2002 and 2005 coverage has improved, especially in rural areas, but the average benefit per household has decreased (espe-

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[18]According to law, the NE benefit is always smaller than the unemployment benefit (Kolpeja, 2006).

cially for the poor) together with an increase in leakage. This explains a decline in the overall budget share reaching the poor. Both under-coverage and leakage rates remain very high by any standard. Weak targeting may be explained by various factors including central budget allocation mechanisms, the design of the targeting methodology, the behavior of clients and administrators and the business cycle. All these factors are probably at work.

Making use of a regression-adjusted matching estimator proposed by Heckman et al. (1998b, 1997), *Ndihma Ekonomike* is found to have a negative and significant effect on household welfare in 2002 and 2005. Changes in program design between 2002 and 2005 seem to have worked in favour of rural households but, overall, the negative impact has increased. The estimated difference-in-differences between 2002 and 2005 is also negative, suggesting that the community-based targeting, largely reduced with the reform, was a positive feature of the program. Results seem to be robust to several sensitivity analyses. Using adult equivalent welfare instead of per-capita welfare increases marginally the negative impact. Testing stochastic dominance of first degree comparing the cumulative distribution functions of the outcome variables for the treated and control groups shows that the control groups dominate invariably the treated group all along the curves.

The natural implications of these findings is that *Ndihma Ekonomike* should be further revised. Possible reforms include the shift of the budget allocation decisions to an independent body, the redesign of the targeting mechanism with the introduction of proxy-means test and anti-corruption measures combined with public information campaigns and training. A viable option would be to discontinue the program and replace it with a new program targeted to vulnerable individuals within the family or conditioned to a required household behaviour able to ensure a higher probability of escaping from poverty trap.

Indeed, the evidence emerging from this study suggests that the problem is not only about targeting but also related to undesirable behavioural responses of the household. Testing the same methods on a subsample "cleaned" from non-poor households among NE beneficiaries and a subsample of poor subjects only, gives similar results. Hence, most of the problems are likely to be in the program's architecture and means testing design. Conditional transfers or transfers complemented with in-kind services delivery would probably improve the program's effectiveness.

A major contribution of this chapter is the combination of robust methodologies,

proposed by the literature on non-experimental evaluation to minimize estimation bias, with a faithful modeling of program design, participation, decentralized management and country context. This study performs the first application in development economies of the non-parametric matching technique extended with regression adjustment, as proposed by Heckman et al. (1998b, 1997) and performs one of the first systematic evaluation of social programs in post-communist transition economies.

# Chapter 3

# Welfare of Children and Effectiveness of Public Policies Using a Collective Household Model

The present chapter aims at contributing to the literature on children welfare evaluation by taking into account intra-household distribution of resources and, as a consequence, intra-household inequality. This task cannot be accomplished within the standard framework of unitary models of consumption, and equivalence scales help only partially, since their scope is different. To investigate what happens within the family's black box, a collective consumption model is estimated and the predicted sharing rule is used to draw some conclusions about the role played by intra-household inequality for children's welfare in Albania. The model is also used to look at the effects that different public policies can have on child welfare. The results show that taking into account intra-household inequality raises the Gini coefficient of children's welfare by nearly 10 percentage points and in-kind transfers are more effective than cash transfers in improving children's wellbeing.

## 3.1 Welfare of children within the family: unitary versus collective framework.

It is common opinion that one of the main aim of a modern society is to take care of its more vulnerable members. Several categories of individuals fall into the definition of vulnerable persons: disabled, people suffering from chronic illness, jobless, and so on. Children are part of this list for several reasons, and even though they usually do not suffer from critical living conditions, the policy makers should always pay particular attention to child wellbeing, an investment for the future of their country. The aim of this chapter is to contribute to the literature on children's welfare evaluation by taking into account intra-household distribution of resources and, as a consequence, intra-household inequality.

This task cannot be accomplished within the standard framework of a unitary model of consumption: in these models the reference unit is the household, which is seen as a black-box within which consumption decisions and resource allocation processes are unknown and assumed to be taken according to the members' needs. For example, one may assume that the household head takes all the relevant decisions, including child consumption, and that this is optimal for the welfare of the household. Such an assumption is unsatisfactory for the purposes of this chapter, since it would imply that a sufficient measure of the welfare of household members is per-capita income.

Equivalence scales partially deal with this problem taking into account family composition, which implies assigning to each household member a weight according to which individual equivalent income can be computed (Sydenstricker and King, 1921; Pollak and Wales, 1981). However, the use of fixed equivalence scales, a common practice in the applied poverty and inequality literature, could lead to ignore important household characteristics and the associated behavioural parameters. These factors are particularly relevant in the developing world where cultural aspects and socio-economic conditions may strongly influence intra-household inequality. Moreover, as pointed out by Ebert and Moyes (2003, 2009), for the computation of the equivalence scales, only the cost of maintaining a child should be taken into account. In contrast with the cost of raising a child (Browning, 1992), Ebert and Moyes (2003, 2009) include only child's basic needs, such as, for example, food, clothing and housing.

The discussion about the use of a more or less restricted monetary value of child welfare to correct poverty and inequality measures is beyond the scope of this chapter. However, what seem to be clear is that in order to measure the welfare of a child, taking into account only his/her basic needs is not sufficient. As a consequence, a measure of children's wellbeing that accounts for the actual distribution of resources within the household is needed. This decision is crucial for evaluating child welfare, especially for poorer households and in developing countries, where the amount of resources is small and the welfare loss caused by an unfair intra-household distribution may be relatively large.

More than twenty-five years are gone since Sen introduced the issue of gender inequality within the household (Sen, 1983), and more than twenty since the development of intra-household bargaining and collective models, but still there seems to be no consensus on the necessity to use this kind of models for the empirical analysis of poverty and inequality. In a fifteen years old article, Alderman et al. (1995) claim that the collective models, introduced by Chiappori (1988, 1992), should be standard practice, while the use of unitary models should be limited to special cases where the collective may not be applicable. From the early nineties, several studies have recognized the importance of taking into account intra-household allocation of resources to properly assess poverty and inequality measures and to design effective policy measures, but only recently Bargain and Donni (2007) developed solid theoretical foundations for the ex-ante evaluation of the impact of public policies on child poverty within the collective framework[1]. This is even more relevant for developing countries where a correct categorical targeting of anti-poverty policies can be particularly important to effectively employ the scarce resources available to the public authorities (see, for example Haddad and Kanbur, 1992; Behrman, 1994; Phipps and Burton, 1996; Peluso and Trannoy, 2007; Bingley and Walker, 2007).

Several studies on child poverty in developing countries pay attention to intra-household resources allocation and child welfare (see, among others, Kanbur, 1991; Inchauste, 2001; Kebede, 2004; Sahn and Gerstle, 2004; Namoro and Roushdy, 2009). However very few studies on developing countries have estimated collective models.

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[1]Their approach is particularly appealing for policy design, since it gives useful indications on the measure that work best and in which conditions, however, it is not suitable for an ex-post analysis as the one proposed in this Chapter. Nonetheless, the theory behind the two approaches is fully compatible and a comprehensive analysis is planned for a future work.

In fact, estimating collective labour supply models[2], can be difficult for several reasons: "standard" labour supply models are quite inadequate for developing countries, where the assumption of competitive labour market is by no way close to reality[3]. Recover, data requirements are usually quite high for these models and proper data may not be available in developing countries. Another problem is represented by the fact that collective labour supply models have not been initially developed for studying children's welfare, even though extensions that include children as public goods for parents exist.

To investigate what happens within the family's black box this study refers to the collective consumption model by Browning et al. (1994) as applied by Menon et al. (2008). This framework allows to shed some light on the household decisions about the distribution of resources. Keeping the assumption of Pareto efficiency, this approach assumes that the distribution of resources within the household is governed by a function of exogenous factors, the so called "sharing rule". The identification of this function helps looking inside the black box for two reasons: first, it allows to identify individual preferences, and hence individual welfare; second, while providing information on how decisions to allocate resources within the family, it allows for public interventions aiming at favouring a more equal intra-household distribution. In other words, the welfare of the household's members can be estimated directly rather than inferred from the household's relative position with per-capita or equivalent income. Thus it is particularly important in the poverty and inequality analysis among weak household's members.

Traditionally, the measurement of monetary child poverty has been criticized in favour of multidimensional indicators of children wellbeing. One of the main point against monetary child poverty is that it implicitly assumes that resources are allocated equally within the family and in the same way between the households. With the use of collective models this weakness became less; some members of the household may be relatively more or less poor than others.

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[2]These are the model proposed by Chiappori (1988) and several successive works.

[3]Discrete labour choice models could be a better solution, but a collective extension of these models have been proposed only by Beninger (2008) in an unpublished paper and in any case the problem of informal work is not assessed in these models.

### 3.1.1 Can intra-household allocation of resources be neglected to evaluate public policies?

In a public policy perspective, a comprehensive normative analysis of the implications of this class of models is still far from being complete. However, Ebert and Moyes (2009) moved the first steps in this direction and, following the pioneering article of Bourguignon (1999), which shows the importance of using collective models to analyze the cost of children, other authors followed the intuition of using collective models to analyze individual poverty and intra-household inequality (Cherchye et al., 2008; Jeremy and Shannon, 2007).

In line with this stream of literature this study tries to explore new perspectives allowed by collective models for child welfare analysis, following a theoretical approach similar to Menon et al. (2008). In particular the difference in the child welfare distribution with respect to a per-capita income approach is explored and the assumption whether receiving public transfers could induce a modification of the sharing rule is tested. To analyse in depth these questions a sample of Albanian households with only children under five[4] drawn from the Albanian Living Standard Measurement Survey is investigated.

Albania is a particularly interesting setting where to study the welfare of children and its relation with household decision processes. This country has been largely affected by the transition to a market economy at the beginning of 1990 with the children becoming one of the most vulnerable groups suffering sever poverty and malnutrition problems[5]. In spite the fact that Albania is the youngest country in Europe, with the highest percentage of people under eighteen (UNICEF, 2009), the social protection system does not favour children and young people in any form. In fact, the social protection system established during the communist era has been progressively deteriorated from the transition to a market economy. The traditional Albanian household acquired renewed relevance after the fall of the communist regime. At the end of the Second World War Albania still was a very traditional rural society with patriarchal family values, in mountain and rural areas the entire social and economic structure was governed by the *Kanun* of Lek Dukagjini, a set of traditional and unwritten laws, based on patriarchy and handed down from generation to gen-

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[4]The study concentrates on these households to have a more homogeneous sample and to avoid possible identification issues. More details can be fund in section 3.2.

[5]See Chapter I.

eration since the Middle Ages. This set of laws gave males unquestioned authority within the household (see Gjonca et al., 2008). During the isolationist Communist regime the educational policies targeted on females changed the patriarchal household. However, the family maintained a central position in the society. With the regime's fall in the 1990s and the following rise of uncertainty, the country set back to a traditional family structure, even if large migration flows out of the country have added a new dimension to the phenomenon, especially in the rural areas (see Danaj et al., 2005; Gjonca et al., 2008). Major problems are suffered by the early childhood since the importance of children's preschool years is not widely understood in the country, especially in poor areas of the north (UNICEF, 2004). The supply of public child care services is very poor and no safety nets measures targeted to households with young children exist: at the moment, the family is still the only institution able to protect vulnerable children. In such a context it is important to look inside the household and study the relation between adulthood and childhood in terms of welfare allocation. When designing family policies, for instance, the possibility of identifying how resources are shared among household's members can be important to define eligibility rules, benefits schemes or to rank individuals in terms of equality.

Then, it has been shown that the impact of cash transfers on poverty among children depends on the response of the household (Alderman et al., 1995). On the other hand, there is a growing evidence that the identity of the recipient of a cash transfer does matter in terms of outcomes (Alderman et al., 1995; Duflo, 2000). Thus a social planner aiming to reduce child poverty through cash transfers should implement policy designs that ensure that cash transfers targeting poor children result in improvements in children's welfare, and/or investment in their human capital.

## 3.2   Resources allocation and consumption decisions

### 3.2.1   The theoretical framework

Unitary models of consumption are derived via maximization of household utility, which depends on consumed quantities of some market goods, subject to a budget constraint. Consumption of individuals is not modeled and income pooling is assumed. The collective model, firstly introduced by Chiappori (1988, 1992), extends the unitary framework to recover individual preferences introducing a function, the

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"sharing rule", which determines the proportion of household resources devoted to each household member.

As a consequence, in order to properly estimate a collective model, the crucial point regards the estimation of the sharing rule, and in particular its econometric identification. Available cross-sectional datasets are usually collected at the household level, hence, in general, it is not possible to recover individual preferences. In such a context, the sharing rule is not identified. However, the additional information needed to identify the sharing rule is not much and is usually available to the researchers. In practice, it is sufficient to observe private consumption of at least one market good (Bourguignon, 1999; Bourguignon et al., 2009; Chiappori and Ekeland, 2006, 2009)[6].

There are mainly three empirical approaches for the identification of the sharing rule. The first approach is proposed by Chiappori (1992) and several successive works, and consists in assuming that leisure time is an exclusive good that a member of the household consumes when not working. Observing leisure time of each member and evaluating it at some market (potential) wage, it is possible to identify the sharing rule by means of a labor supply model. This approach is by construction not feasible if one is looking for the sharing rule among adults ad children since children do not work and, more importantly, do not have any (potential) wage.

The second approach proposed by Browning et al. (2006) assumes that there is no change in preferences when passing from single to married. Using available information on singles one can estimate individual preferences. These preferences are applied directly to each member of the couple, recovering the sharing rule by "difference". Again this approach is not applicable to the case of children (not to mention that it is subject to a strong behavioral assumption).

The third approach for the identification of the sharing rule, consists in using available information on consumption of exclusive or assignable goods. If the survey records at least one expenditure category which can be exclusively assigned to just one member of the household, then it is possible to identify the sharing rule. This method shares its theoretical foundation with the first approach, but uses a different source of identification, individual consumption rather than leisure time, within a

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[6]If private consumption of one good is observed, and there are no externalities, for a given observed demand $x(\mathbf{p}, y)$ satisfying the Collective Slutsky property and such that the Jacobian $\partial x(\mathbf{p}, y)/\partial \mathbf{p}$ is invertible, then the sharing rule is identified.

different framework, consumption demand rather than labor supply (Browning et al., 1994).

The choice of the proper approach depends on the available data and on the purposes of the analysis. In this chapter, since the focus is on measuring children's welfare, the third approach is the only applicable for the reasons explained above. The expenditure dataset used in this chapter provides information on several exclusive goods, child clothing, adult clothing, child shoes, adult shoes, education (assigned to children), alcohol and tobacco (assigned to adults).

To properly describe the theoretical model, it is important to distinguish between ordinary, assignable and an exclusive goods.

**Definition.** *A good is **ordinary** when private consumption of this good is not observed or deducible.*

This is the common case in household expenditure surveys. The good will be consumed by each member of the household, but it is impossible to know in which proportion. Examples are numerous, and include food, communications, recreation and so on.

**Definition.** *A good is **assignable** when it is consumed in observable proportions by each member of the household.*

For example, if there is information on how far is the working place of the adult member and of school for the child, travelling expenditure could be assigned proportionally to the adult and the child.

**Definition.** *A good is **exclusive** when private consumption of a good is observed for an identifiable member of the household.*

This is the case of toys or schooling expenditures, which should be consumed only by children.

Assume that a household is composed by two members, an adult and a child. The vector of household consumption[7], denoted by $\mathbf{x}$, is composed of ordinary goods

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[7]If not differently specified, consumption goods or vectors refer to quantities. In general, superscripts indicate the household member, in the present study adult and child, subscripts indicate a specific good.

**o** and exclusive (or assignable) goods $\mathbf{e}^a$ and $\mathbf{e}^c$, and is additively separable, i.e. $\mathbf{x} = \mathbf{x}^a + \mathbf{x}^c$.[8] Individual consumption $\mathbf{x}^a$ and $\mathbf{x}^c$ is not observed, while expenditure on and prices of the exclusive goods ($\mathbf{e}^a$, $\mathbf{e}^c$, $\mathbf{p}^a$ and $\mathbf{p}^c$) are observed and exogenous.

For explanatory purposes, but without loss of generality, the vector $\mathbf{x}$ is assumed to be composed by one ordinary good $o$, with price normalized to 1, and two exclusive goods $e^a$ and $e^c$, with prices $p^a$ and $p^c$ respectively. It is also assured that the household is not engaged in production[9] and that labour supply is fixed. As a consequence, household income is exogenous and assumed to be approximated by total expenditure of the household, denoted by $y$ and equal to $\mathbf{p}'\mathbf{x}$, with $\mathbf{p} = \{1, p^a, p^c\}$ and $\mathbf{x} = \{o, e^a, e^c\}$. Hence, the available information set is $\{e^a, e^c, o; p^a, p^c; y\}$ and the individual decision problem is

$$\max U^k(e^k, o) \tag{3.1}$$
$$s.t. \quad p^k e^k + o \leq \phi^k(p^a, p^c, y)$$
$$e^k \geq 0, o \geq 0, \quad k = a, c;$$

where $\phi^k$ amount of resources devoted to member $k$, or, in other words, the sharing rule governing the intra-household allocation of resources.

In this framework, the sharing rule can be viewed as a sort of contracting tool through which household members decide how to distribute resources between them and represents the link between the household and individual level of the decision process. Once each member's resources are assigned he/she will maximize his/her utility subject to its own budget constraint. Thanks to this link, and provided that it is possible to properly estimate the sharing rule, individual preferences can be recovered, and hence individual welfare measures, from household data.

For the econometric identification of the sharing rule, a technique borrowed from Pollak and Wales (1981); Lewbel (1985); Bollino et al. (2000), commonly used to incorporate demographic variables, exogenous factors or household technologies into

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[8]In this study, public household goods, as housing, traveling costs and so on, are not taken into account. The reason is that the inclusion of such goods implies the adoption of a household production function, possibly with economies of scale which, in absence of the proper information in the data, would cause identification issues for the sharing rule.

[9]Rural Albanian households are likely to be engaged in household production (farm households). The collective consumption model could be estimated separately, if a bigger sample size was available, including household production for rural households.

demand functions can be used.

In general, demographic functions interact with exogenous prices or income and and the magnitude of this interaction can be identified provided that there is sufficient information and variability in the data. The analogy stems from the use of an interaction term with income *a la* Barten (Barten, 1964) for the identification of the sharing rule, where the estimation problem is similar to that of estimating a regression containing unobservable independent variables.

In the next section the demand system is specified and a theoretical proof of the identification of the sharing rule is provided.

### 3.2.2   Model specification and identification of the sharing rule

To derive the chosen specification of collective demand system a quadratic extension of the Almost Ideal Demand System (Deaton and Muellbauer, 1980b) proposed by Banks et al. (1997) can be used as starting point.

Budget shares for a Quadratic Almost Ideal Demand System (QAIDS) are specified as

$$w_i(y, \mathbf{p}; \theta_i) = \alpha_i + \sum_j \gamma_{ji} \ln p_j + \beta_i \left( \ln y - \ln a(\mathbf{p}) \right) + \frac{\lambda_i}{b(\mathbf{p})} \left( \ln y - \ln a(\mathbf{p}) \right)^2, \quad (3.2)$$

where $w_i(y, \mathbf{p}; \theta_i)$ is the good $i$ budget share, $\theta_i = \{\alpha_i, \gamma_{ij}, \beta_i, \lambda_i\}$ are parameters, $p_j$ is price of good $j$ and $y$ is total expenditure. $a(\mathbf{p})$ and $b(\mathbf{p})$ are two price indexes, defined as

$$\ln a(\mathbf{p}) = \alpha_0 + \sum_i \alpha_i \ln p_i + \frac{1}{2} \sum_i \sum_j \gamma_{ij} \ln p_i \ln p_j \qquad (3.3)$$

$$b(\mathbf{p}) = \prod_i p_i^{\beta_i}. \qquad (3.4)$$

When demographic modifications *a la* Gorman are introduced (Gorman, 1976), demographic characteristics interact multiplicatively with income in a theoretically plausible way (Lewbel, 1985; Perali, 2003). Budget shares are modified as follows

$$w_i(y, \mathbf{p}; \theta_i) \Rightarrow w_i(y, \mathbf{d}, \mathbf{p}; \theta_i) = w_i(t_i(y, \mathbf{d}), \mathbf{p}; \theta_i), \qquad (3.5)$$

where $t_i(y, \mathbf{d})$ is the income translating function and $\mathbf{d}$ is a vector of demographic variables or household characteristics.

Applying this transformation to equation (3.2) the following demographically modified budget share equation is obtained

$$w_i(y, \mathbf{p}, \mathbf{d}; \theta_i) = \alpha_i + t_i(\mathbf{d}) + \sum_j \gamma_{ji} \ln p_j + \beta_i (\ln y^* - \ln a(\mathbf{p})) \tag{3.6}$$
$$+ \frac{\lambda_i}{b(\mathbf{p})} (\ln y^* - \ln a(\mathbf{p}))^2 ,$$

where

$$t_i(\mathbf{d}) = \sum_r \tau_{ir} d_r, \tag{3.7}$$
$$\ln y^* = \ln y - \sum_i t_i(\mathbf{d}) \ln p_i. \tag{3.8}$$

In order to comply with homogeneity properties of the demand system, this specification of the budget shares demand system is subject to a number of restrictions on the parameters. In particular, to satisfy linear homogeneity in $\mathbf{p}$ and Slutsky symmetry the following restrictions must hold

$$\sum_i \alpha_i = 1; \quad \sum_i \beta_i = 0; \quad \sum_i \lambda_i = 0; \quad \sum_i \gamma_{ij} = 0; \quad \sum_j \gamma_{ij} = 0; \quad \gamma_{ij} = \gamma_{ji}, \tag{3.9}$$

while, as proven in Perali (2003), to ensure that the modified cost function maintains the homogeneity property, demographic parameters must satisfy

$$\sum_i \tau_{ir} = 0. \tag{3.10}$$

To next step to obtain the collective QAIDS introducing the sharing rule. The maximization problem in (3.1) states that the sharing rule determines (the natural logarithm of) the amount of resources that each household member receives. Being the decision process individual rather than centralized, each member decides how to allocate his share of total expenditure according to

$$w_i^k(y, \mathbf{d}, \mathbf{p}; \theta_\mathbf{i}) = \alpha_i^k + t_i^k(\mathbf{d}) + \sum_j \gamma_{ji}^k \ln p_j + \beta_i^k \left( \ln y^{k*} - \ln a(\mathbf{p}) \right) \tag{3.11}$$
$$+ \frac{\lambda_i^k}{b^k(\mathbf{p})} \left( \ln y^{k*} - \ln a(\mathbf{p}) \right)^2 ; \quad k = a, c.$$

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Note that, as stated before, the two individual demand equations can be summed to form the household demand equation. In this equation some individual parameters cannot be identified either because of collinearity, for example two constants in the same equations can not be identified, or because of data construction. For instance prices and demographic characteristics are recorded at household level and are likely to be same for all household members. Hence, summing up the demand equations for the adult and the child results in

$$w_i(y, \mathbf{d}, \mathbf{p}; \theta_{\mathbf{i}}) = \alpha_i + t_i(\mathbf{d}) + \sum_j \gamma_{ji} \ln p_j \tag{3.12}$$
$$+ \beta_i^a \left( \ln y^{a*} - \ln a(\mathbf{p}) \right) + \frac{\lambda_i^a}{b^a(\mathbf{p})} \left( \ln y^{a*} - \ln a(\mathbf{p}) \right)^2$$
$$+ \beta_i^c \left( \ln y^{c*} - \ln a(\mathbf{p}) \right) + \frac{\lambda_i^c}{b^c(\mathbf{p})} \left( \ln y^{c*} - \ln a(\mathbf{p}) \right)^2.$$

Household expenditure has been divided into the adult and the child expenditure. In particular, in equation (3.12), $\ln y^{a*}$ and $\ln y^{c*}$ are defined as

$$\ln y^{a*} = \ln \phi^a(p^a, p^c; y; \mathbf{s}) - \sum_i t_i(\mathbf{d}) \ln p_i, \tag{3.13}$$
$$\ln y^{c*} = \ln \phi^c(p^a, p^c; y; \mathbf{s}) - \sum_i t_i(\mathbf{d}) \ln p_i.$$

where $\ln \phi^k(p^a, p^c; y; \mathbf{s})$ is the sharing rule of the $k^{th}$ household member, $p^a$ and $p^c$ are the prices of the exclusive goods, and $\mathbf{s}$ is a set of household/environmental characteristics which is likely to influence the intra household resource distribution but not the overall household demand (the literature often refers to $\mathbf{s}$ as "distribution factors").

Note that in general the resource allocation decision process may be dependent on households or individual characteristics. In fact, households with comparable levels of income and prices may have different sharing rules, which may depend on several factors, as the social background, education of the adults and so on. To take into account this heterogeneity, the sharing rule is defined as a function of observed individual expenditure $y^k$, price of the exclusive goods $p^a$ and $p^c$, and a vector of other exogenous characteristics $\mathbf{s}$, in analogy with Barten's scaling, so that a demographically scaled income is obtained, i.e.

$$\phi^k(p^a, p^c; y; \mathbf{s}) = y^k \cdot m^k(p^a, p^c; \mathbf{s}), \tag{3.14}$$

which in natural logarithms becomes

$$\ln \phi^k(p^a, p^c; y; \mathbf{s}) = \ln y^k + \ln m^k(p^a, p^c; \mathbf{s}). \tag{3.15}$$

In equation (3.15), $m^k(p^a, p^c; \mathbf{s})$ is an individual income scaling function, defined over individual prices and a set of distribution factors $\mathbf{s}$.

The identifying assumption in the model is that the portion of income of each member, $y^k$, can be recovered from observed expenditures on exclusive or assignable goods. In practice, observed individual income $y^k$ is determined on the basis of the ratio of the expenditure in exclusive goods, $r^k$. Assuming that adult's expenditure is defined as the expenditure on his exclusive good $e^a$ plus half of expenditure in ordinary goods $o$, and the same holds for the child, this is equivalent to write

$$\ln y^k = r^k \ln y, \tag{3.16}$$

where $r_i$ defined as

$$r^k = \frac{1}{y} \left( p^k e^k + \frac{1}{2} o \right). \tag{3.17}$$

From equations (3.15) and (3.17) it follows that the sharing rules can be written as function of household income, individual prices, distribution factors and the ratio of expenditure in exclusive goods, i.e.

$$\ln \phi^a(p^a, p^c; y; \mathbf{s}) = r^a \ln y + \ln m^a(p^a, p^c; \mathbf{s}) \tag{3.18}$$
$$\ln \phi^c(p^a, p^c; y; \mathbf{s}) = r^c \ln y + \ln m^c(p^a, p^c; \mathbf{s}).$$

Since $\ln \phi^a(p^a, p^c; y; \mathbf{s}) + \ln \phi^c(p^a, p^c; y; \mathbf{s}) = \ln y$, by definition and $r^a \ln y + r^c \ln y = \ln y$ by construction, given equations (3.18), the following constraint must hold

$$\ln m^a(p^a, p^c; \mathbf{s}) = -\ln m^c(p^a, p^c; \mathbf{s}). \tag{3.19}$$

To save on notation, set $\ln m^a(p^a, p^c; \mathbf{s}) = \ln m(\cdot)$ and $\ln m^c(p^a, p^c \mathbf{s}) = -\ln m(\cdot)$.

Substituting (3.18) into (3.13) produces

$$\ln y^{a*} = r^a \ln y + \ln m(\cdot) - \sum_i t_i(\mathbf{d}) \ln p_i \tag{3.20}$$

$$\ln y^{c*} = r^c \ln y - \ln m(\cdot) - \sum_i t_i(\mathbf{d}) \ln p_i. \tag{3.21}$$

In analogy to function $t_i(\mathbf{d})$, function $m(\cdot)$ is identified provided that there is enough variation in distribution factors $\mathbf{s}$ and prices $p^a$ and $p^c$, and as long as the distribution factors differ from the demographic variables $\mathbf{d}$. The proof is similar to proving that function $t_i(\mathbf{d})$ is identified (Gorman, 1976; Lewbel, 1985).

In the empirical specification the $m(\cdot)$ function is a Cobb-Douglas function, so that the logarithmic specification is linear, that is

$$\ln m(p^a, p^c; \mathbf{s}) = \phi_0 \ln p + \phi_1 \ln s_1 + \phi_2 \ln s_2 + \dots \tag{3.22}$$

The resulting model is similar to that proposed by Menon et al. (2008) to analyse couples without children.

The following section describes the empirical strategy implemented to estimate the collective demand system (3.12).

## 3.3 Empirical strategy

### 3.3.1 The econometric specification

When studying systems of the demand equations, the problem of zero "expenditure" must be faced for those goods that are not purchased by a household. Coefficient estimates can be biased when only observed positive purchase data are used, hence it is necessary to apply the proper correction technique. There are several econometric methods to correct for zero expenditures which differ in the assumptions related to the source of zeros. For example the tobit model (Maddala, 1983; Amemiya, 1985) captures the corner solutions for the utility maximization problem, which imply that the observation is zero just because the household decided to consume zero on the basis of disposable income, prices and its preferences. This could be the case for some goods, but for some other it is not. For example, semi-durable goods (as clothing) may not be purchased in the reference period simply because they give utility for more than one period and a household may need to buy them only once in, say, three

months. This situation is called "infrequency of purchases", and cannot be properly captured by a tobit model.

The Double-Hurdle model (Yen, 1993), on the other side, assumes that zero expenditures are explained by a decision process that arises from unobserved latent variables which drive consumer choices. The model allows a separate estimation of participation -a technical expression to indicate the decision to buy a good- and expenditure parameters. This is the case of alcohol, which may be not consumed because of moral conviction or health problems, which are not observable in the survey. Again, this model is not suitable when considering semi-durable goods, as clothing.

An alternative to the double-hurdle model is the Heckman correction model, which assumes that zero expenditures are due to sample selection bias (Heckman, 1979) and are treated as a misspecification error. This purely statistical approach allows to obtain different estimates for participation and expenditure parameters, with the participation choice assumed to be dependent on partially different observable variables with respect to the consumption equation for identification.

In the original model, the first stage determines the participation probability using a probit regression, and in the second stage, a specification for the omitted variable can be used to correct, if present, the sample selection bias. The omitted variable is known as the inverse Mill's ratio, which is the ratio between density and cumulative probability function of the standard normal distribution of the probability to observe a positive consumption. In the empirical model a generalization of the Heckman correction model which overcomes the issues observed by Amemiya (1978, 1979) is used. In particular, the reference work of Shonkwiler and Yen (1999) is followed, which shows the inconsistency of the Heckman estimator and proposes a consistent two-stages estimator for a system of censored equations.

Following the authors, consider the following general limited dependent variables system of equations

$$w_{it}^* = w(y, \mathbf{d}, \mathbf{p}; \theta_{\mathbf{i}}) + \epsilon_{it}, \quad c_{it}^* = z_{it}'\delta_i + v_{it}, \tag{3.23}$$

$$c_{it} = \begin{cases} 1 & \text{if } c_{it}^* > 0 \\ 0 & \text{if } c_{it}^* \leq 0 \end{cases} \quad w_{it} = c_{it}w_{it}^*,$$

$$(i = 1, 2, ..., m; t = 1, 2, ..., T),$$

where $i$ represents the $i^{th}$ demand equation and $t$ the $t^{th}$ observation, $w_{it}$ and $c_{it}$ are the observed dependent variables, $w_{it}^*$ and $c_{it}^*$ are the latent variables, $w(y, \mathbf{d}, \mathbf{p}; \theta_{\mathbf{i}})$ is the demand function, $z_{it}$ is vectors of exogenous variables, $\delta_i$ are parameters, and $\epsilon_{it}$ and $\upsilon_{it}$ are random errors. Without entering into details, system (3.23) can be written as

$$w_{it} = \Psi(z'_{it}\delta_i)w(y, \mathbf{d}, \mathbf{p}; \theta_{\mathbf{i}}) + \eta_i\psi(z'_{it}\delta_i) + \xi_{it}, \tag{3.24}$$

where $\Psi(z'_{it}\delta_i)$ and $\psi(z'_{it}\delta_i)$ are univariate standard normal cumulative distribution function and probability density function respectively. The system can be estimated by means of a two-step procedure, where $\delta_i$ are are estimated using a Maximum Likelihood probit estimator, and used to predict $\Psi(z'_{it}\delta_i)$ and $\psi(z'_{it}\delta_i)$. Successively, estimates of $\theta_i$ and $\eta_i$ in the system

$$w_{it} = \Psi(z'_{it}\hat{\delta}_i)w(y, \mathbf{d}, \mathbf{p}; \theta_{\mathbf{i}}) + \eta_i\psi(z'_{it}\hat{\delta}_i) + \xi_{it} \tag{3.25}$$

are obtained by Full Information Maximum Likelihood.

Besides the zero expenditures problem, another problem arises, namely, the lack of information on prices and/or unit values. Since the survey records only expenditure information[10], the lack of information about quantities purchased precludes the possibility to derive household specific unit values. On the other hand, available price indexes have an aggregation level similar to that of the survey but are not sufficient to provide plausible elasticities. For this reason, the procedure, originally proposed by Lewbel (1989) to construct pseudo unit values is used. Without entering into details, the pseudo unit values is estimated by means of

$$\hat{p}_i = \left(\frac{1}{k_i^*}\prod_{j=1}^{n_i} w_{ij}^{-w_{ij}}\right)ex_i, \tag{3.26}$$

where $ex_i$ is expenditure on the i-th good, $w_{ij}$ is the subgroup budget share. Good $i$ is a good of the demand system, which is the aggregation of $j$ subgroup goods (for example food is the aggregation of vegetables, meat, ..., and so on). $k_i^*$ is a scaling

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[10]As described in the next section, this methodology is applied to the Albanian LSMS by the World Bank

factor defined as

$$k_i^* = \prod_{j=1}^{n_i} k_{ij}^{-k_{ij}} \qquad (3.27)$$

where $k_{ij} = mean(w_{ij})$ is the mean subgroup budget share.

### 3.3.2 Data and sample selection

The data used in this chapter are drawn from the World Bank Living Standard Measurement Survey collected in Albania in 2002[11]. These data contain information on household consumption, socio-economic conditions of the household and individual variables related to education, labour market and health. The original sample covers 3,599 households, but only households with children under-five are selected for the analysis. The sample consists of 511 households.

The decision to drop families with children older than five is due to several reasons. First, the focus is on the welfare of young children within the family and the support of public policies for early childhood. Since schooling is mandatory for children aged 6 and more, preschooling represents an in-kind public transfer relevant for child wellbeing[12] and very selective for transition countries[13]. Second, children under-five are not affected by the phenomenon of child labor which can influence children's bargaining power. Since the dataset used does not collect information on child

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[11]2005 data are not used because it was not possible to reconstruct the consumption categories from the row data as needed. This is due to some intermediate datasets which are not included in the available data and cannot be reconstructed from the do files provided by the World Bank.

[12]Empirical studies focusing on developed countries have shown the importance of early childhood programs for skill formation. For example, Heckman and Masterov (2007) show that investing in early childhood programs is a kind of public investment not affected by the equity-efficiency trade off. The authors also focus on social benefits of preschool programs, especially for disadvantaged children. In developing countries, preschool attendance is typically considered important for monitoring children's health and nutrition status, especially in the case of poor children (see the empirical works of Behrman et al., 2004; Alderman et al., 2006). Preschool is like a multidimensional indicator, for example within the context of UNICEF's basic framework of survival, protection, development and participation, preschool attendance in developing countries is relevant for all the domains.

[13]Micklewright (1999) shows that enrolment rates in kindergarten, which is non-compulsory, have dropped sharply during the transition in the Caucasus, Central Asia, South-east Europe and the Western CIS while similar rates have fallen only slightly in Central Europe and the Baltic States. At the end of communist period in Albania preschool enrolment was about 60% (Danaj et al., 2005), in 1992 the rate reached the 34% (UNICEF, 2004) while during the recovery period children attending preschool programs still were only around 45-50% UNICEF (2004, 2009).

Table 3.1: Descriptive Statistics of the Variables Used in The Collective Model - Households with Children Under-Five

| Variable names | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Share of meat | 0.148 | 0.082 | 0.000 | 0.541 |
| Share of clothing | 0.128 | 0.104 | 0.000 | 0.553 |
| Share of housing | 0.033 | 0.034 | 0.000 | 0.342 |
| Share of alc. & tob. | 0.018 | 0.026 | 0.000 | 0.155 |
| Share of other goods | 0.030 | 0.048 | 0.000 | 0.442 |
| Share of food | 0.643 | 0.131 | 0.273 | 0.946 |
| Price of meat (log) | 5.860 | 0.642 | 0.762 | 6.802 |
| Price of clothing (log) | 7.202 | 0.284 | 6.129 | 7.783 |
| Price of housing (log) | 5.794 | 0.234 | 4.534 | 6.393 |
| Price of alc. & tob. (log) | 5.873 | 0.162 | 5.447 | 6.343 |
| Price of other goods (log) | 6.041 | 0.543 | 4.427 | 7.134 |
| Price of food (log) | 2.883 | 1.371 | -0.641 | 5.092 |
| Total expenditure (log) | 9.366 | 0.510 | 7.955 | 10.97 |
| More females than males in the household | 0.198 | 0.399 | 0.000 | 1.000 |
| Household head has university or higher degree | 0.096 | 0.295 | 0.000 | 1.000 |
| Household head is in bad health | 0.233 | 0.423 | 0.000 | 1.000 |
| The spouse is in bad health | 0.276 | 0.447 | 0.000 | 1.000 |
| Number of children aged 5 or below | 1.564 | 0.650 | 0.000 | 5.000 |
| Number of adults | 2.603 | 1.121 | 0.000 | 7.000 |
| Number of elderly | 0.480 | 0.500 | 0.000 | 1.000 |
| Multiple couple within the household | 0.343 | 0.475 | 0.000 | 1.000 |
| Minimum income needed to make end needs (log) | 10.443 | 0.565 | 5.992 | 12.899 |
| Subjective socio economic status | 3.640 | 1.656 | 1.000 | 9.000 |
| Big house | 0.143 | 0.350 | 0.000 | 1.000 |
| Household has a telephone | 1.746 | 0.436 | 1.000 | 2.000 |
| Presence of emigrated | 0.272 | 0.445 | 0.000 | 1.000 |
| Female household head | 0.139 | 0.346 | 0.000 | 1.000 |
| Household head is young | 0.378 | 0.485 | 0.000 | 1.000 |
| Head have only primary or no education | 0.583 | 0.494 | 0.000 | 1.000 |
| Spouse is older than head | 0.082 | 0.275 | 0.000 | 1.000 |
| Bi-active couple | 0.272 | 0.445 | 0.000 | 1.000 |
| House is less than 40 square meters | 0.166 | 0.373 | 0.000 | 1.000 |
| House is at least 100 square meters | 0.143 | 0.350 | 0.000 | 1.000 |
| No preschools in the community | 0.209 | 0.407 | 0.000 | 1.000 |
| No ambulatory or hospital in the community | 0.149 | 0.356 | 0.000 | 1.000 |
| Price ratio | 0.4960 | 0.055 | 0.345 | 0.711 |
| Catholic or other non-orthodox religion | 0.096 | 0.295 | 0.000 | 1.000 |
| Child is ill | 0.155 | 0.362 | 0.000 | 1.000 |
| Age ratio of the spouses | 0.410 | 0.155 | 0.000 | 0.632 |
| Education ratio of the spouse | 0.185 | 0.254 | 0.000 | 1.000 |
| Receives NE benefit | 0.194 | 0.396 | 0.000 | 1.000 |
| Children attend preschool | 0.252 | 0.568 | 0.000 | 2.000 |
| Ratio of adult vs. child consumption $(r_a)$ | 0.512 | 0.076 | 0.155 | 0.815 |

labour, this would represent an unobservable factor for the present study. Third, the sharing rule is estimated for an equivalent household composed by one adult and one child controlling for household composition at the household level. However, the presence of children of very different age would severely affect both the estimate of the sharing rule and of the overall system of consumption demand of goods, posing an identification problem[14] for the sharing rule (Chiappori and Ekeland, 2009)[15].

The estimation of the demand system is conducted over six categories of goods: food, alcohol and tobacco, clothing, meat, housing and other goods[16]. Household-specific prices, or pseudo unit values, of these goods are assigned following the procedure described in Section 3.3.1

As proved in Section 3.2.2, the identification of the sharing rule comes from two observed exclusive expenditures. In this dataset, both clothing and footwear are recorded for males, females and children. Moreover, it is sufficiently safe to assume that consumption of alcoholic beverages and tobacco is exclusive to the adults. Expenditure in education, moreover, is assumed to be exclusive to children -only expenditures strictly related to preschool are included. Finally, in order to take into account the number of family members, per-capita individual consumption is introduced among the explanatory variables. In this way, within each household, the individual expenditures equivalent to an hypothetical household composed by one adult and one child are computed.

The gender dimension, which has been neglected in the model because of the choice of an adult/child sharing rule[17], is recovered with a dummy variable indicating if females are more than males in the household, a dummy variable indicating the highest level of education of household's head, dummy variables for head's or spouse's chronic illness or disability, variables on family composition (number of children, number of adults and number of elderly), a variable indicating the presence of multiple couples within the household (enlarged families), a subjective declaration about a minimum income necessary to survive, a subjective declaration of socio-economic

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[14]For example it is not clear if children above twelve consume child or adult clothing and children between six and twelve attend mandatory school.

[15]We plan to deal with this problem in a future work, aiming at extending the collective model to take into account of resources distribution among males, females and children simultaneously.

[16]To avoid unnecessary complications only non durable goods are considered.

[17]Indeed, the research focusing on transfers between adults and children should not anyway neglect transfers between husbands and wives (Bourguignon, 1999).

status, a dummy variable taking "1" if the house is bigger than 100 squared meters, a dummy owning a telephone and a dummy indicating if at least a member has emigrated abroad after the " pyramids crisis" in 1997[18].

The distribution factors **s** chosen to be in the sharing rule are: the price ratio of the two comparable exclusive goods (the price of adult clothing divided by the sum of adult clothing and children clothing), household declaring to belong to religious minorities (other than Muslim or Orthodox)[19] or not religious, chronically illness of the child, both partners employed ("bi-active couple"), age ratio defined as female age divided by the sum of partners' ages, education ratio defined as wife's years of schooling divided by the sum of the couple's years of schooling, *Ndihma Ekonomike* participation (see Chapter II), and attending early-childhood programs delivered by the public sector (the variable takes "0" if no child attends preschool in the family, "1" if at least one child currently attends and "2" if all children attend preschool.). These last two variables are introduced to test the possibly different impacts of cash and in-kind transfers. In fact, *Ndihma Ekonomike* is a sort of minimum income cash program, while preschooling can be considered as the most important in-kind transfer from which a child is recipient.

As regards the variables used in the first stage probit estimates of the zero correction estimator, **z**, a larger set of variables than **d** is used. A description of this variables is omitted because it is self-explained in Table 3.1 which reports the estimates of the probit regressions used for the " zero correction".

## 3.4   Results

### 3.4.1   Estimates

This section presents the results of the two-steps estimation of model (3.25). When zero expenditure are observed for one good in the data, the first step estimates the probability of observing a positive consumption with a probit model, while the

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[18]The big financial crisis was due to the follows. Pyramid's (or Ponzi) schemes had been operating since 1992 and in February 1997 they collapsed with a large share of the population's savings. The diffused rebellion, induced by the collusion between pyramid entrepreneurs and the government elected democratically in 1992, ended in a civil disorder and collapse of state power with the south of the country controlled by armed groups. This caused a huge economic recession and massive migrations flows.

[19]The two major religious groups of Albania.

Table 3.2: Probit Estimates for the Correction of the Zero Expenditure

| Variable name | Meat | Clothing | Housing | Alc.& Tob. | Others |
|---|---|---|---|---|---|
| Constant | 6.113 | 0.918 | 6.336*** | -0.176 | 2.392*** |
| Female household head | -0.350 | -0.255 | 2.935*** | -0.165 | -0.203 |
| More females than males (adults) | 0.907 | 0.333 | 0.034 | -0.189 | 0.156 |
| Household head is young | -0.780 | 0.225 | 0.157 | -0.191 | -0.337 |
| Head have only primary or no education | -0.078 | -0.150 | -0.474 | -0.060 | -0.466*** |
| Head have university degree or more | 2.352 | -0.049 | 1.784*** | -0.344 | -0.213 |
| Spouse is older than head | -0.001 | -0.543* | 3.034*** | -0.160 | -0.076 |
| H. head has bad health conditions | 0.065 | 0.171 | 0.139 | 0.143 | -0.002 |
| Number of children under 5 in the household | 0.633 | 0.091 | 0.331* | -0.023 | -0.066 |
| Presence of elderly | -0.938 | -0.096 | -0.287 | 0.169 | 0.241 |
| Bi-active couple | 0.021 | -0.352 | 0.063 | 0.416*** | 0.152 |
| Economic status | 0.353** | 0.143* | 0.246** | 0.162*** | 0.032 |
| House is less than 40 sq m | -0.053 | -0.377 | -0.069 | 0.044 | -0.291 |
| House is at least 100 sq m | 0.063 | 0.079 | -0.098 | -0.164 | 2.719** |
| No preschools in the community | -0.540 | 0.912*** | -0.268 | -0.054 | -0.466* |
| No ambulatory or hospital in the community | 0.155 | -0.476* | -0.368 | -0.107 | -0.254 |
| Presence of a telephone inside dwelling | -2.518 | 0.197 | -2.404*** | -0.070 | -0.114 |
| Presence of emigrated | 0.103 | 0.037 | -0.468 | -0.147 | -0.113 |

second stage uses the predicted Mill's ratios to estimate the demand system with Full Information Maximum Likelihood, imposing a-priori parameters' restrictions.[20]

Table 3.3 presents the estimates of the collective QAIDS demand system[21]. Income and price parameters are significant, with some exceptions, as income parameter of housing expenditure for the adult and alcohol parameter for the child, which are all non significant[22]. Among demographic variables, the general evidence is towards small parameters values, even if many are still significantly different from zero. In particular the interaction of higher education of the household head with income has a positive influence on consumption of goods, even if more education does not involve more consumption of alcohol and of tobacco. The number of children in the family influences positively the household consumption of clothing and food, as expected, and to live in an enlarged family has a positive effect on the consumption of food. The consumption of alcohol and tobacco is influenced by having members emigrated abroad and by the number of adults in the family. "Other goods" is mostly composed by education and cultural expenditures which are influenced positively by the education of the household head and by the self-reported socio-economic status.

Table 3.4 shows income and price elasticities. Signs are consistent with consumption theory, with negative own price elasticities. The relevant exception is alcohol and tobacco price elasticities which are positive. These goods may suffer from different effects on the estimate of own price elasticities: first, alcohol and tobacco are not consumed by child but he/she could still influence household consumption in a way that may not be properly captured by the model. Second, Albania has a strong smoking tradition and a huge traditional consumption of made home *raki rrushi*[23] which may bias estimates. Third, alcohol and tobacco are addictive goods, thus their consumption may not be much affected by their market prices.

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[20]Symmetry and homogeneity are ensured by construction, with the Slutsky matrix having two individual income terms which sum up to the household income effect, because of the symmetry of the individual transfers shown in equation (3.19).

[21]The parameters of the sharing rule are estimated simultaneously with the demand system, but are report in a separate table. Instead, the estimates of the first stage probit regressions are not reported: they are available upon request.

[22]It is true that alcohol is not consumed by the child but the demand system is estimated at the household level, and it is possible that the presence of children may influence the overall demand, and not only trough the "sharing rule".

[23]Raki rrushi is the Albanian version of the Turkish *raki*. It is a spirit considered to be the national drink by Albanians. It is made using 100% pure grape (*rushi* is the Albanian word for grape and it is so pure that Albanians even use it to heal cuts and scrapes.)

Table 3.3: Parameters and Demographic Variables of the Collective Demand System

| | Meat | Clothing | Housing | Alc/Tob | Others | Food |
|---|---|---|---|---|---|---|
| **Parameters** | | | | | | |
| $\alpha_i$ | 0.070 | 0.162 | 0.005 | -0.022 | 0.089** | 0.696*** |
| | (0.067) | (0.110) | (0.032) | (0.061) | (0.040) | (0.120) |
| $\gamma_{ji}$ | 0.008 | 0.003 | -0.001 | -0.007** | 0.000 | -0.004 |
| | (0.005) | (0.006) | (0.002) | (0.0032) | (0.002) | (0.006) |
| | | -0.073*** | 0.013*** | -0.009 | 0.007 | 0.059*** |
| | | (0.011) | (0.004) | (0.007) | (0.004) | (0.008) |
| | | | -0.024*** | 0.008 | 0.006** | -0.002 |
| | | | (0.005) | (0.005) | (0.002) | (0.003) |
| | | | | 0.053*** | -0.014*** | -0.032*** |
| | | | | (0.010) | (0.004) | (0.006) |
| | | | | | -0.005* | 0.007** |
| | | | | | (0.003) | (0.003) |
| | | | | | | -0.028*** |
| | | | | | | (0.010) |
| $\beta_i^a$ | 0.014 | 0.031*** | -0.002 | -0.029*** | -0.029*** | 0.014 |
| | (0.010) | (0.010) | (0.003) | (0.006) | (0.006) | (0.013) |
| $\beta_i^c$ | -0.003 | 0.049*** | -0.001 | -0.033*** | 0.017*** | -0.029 |
| | (0.008) | (0.018) | (0.004) | (0.005) | (0.006) | (0.024) |
| $\lambda_i^a$ | -0.004** | 0.005*** | 0.000 | 0.002** | 0.005*** | -0.009*** |
| | (0.002) | (0.002) | (0.001) | (0.001) | (0.001) | (0.002) |
| $\lambda_i^c$ | -0.004** | 0.011*** | 0.002** | 0.001 | 0.003*** | -0.012*** |
| | (0.002) | (0.002) | (0.001) | (0.001) | (0.001) | (0.003) |
| $\eta_i$ | -0.082 | -0.232*** | 0.033 | -0.027 | -0.024 | |
| | (0.063) | (0.055) | (0.026) | (0.018) | (0.016) | |
| **Demographic variables** | | | | | | |
| Females more than males in hh | 0.022* | -0.017 | -0.005 | 0.010 | -0.002 | -0.010 |
| | (0.012) | (0.018) | (0.004) | (0.008) | (0.005) | (0.018) |
| Head has univ. degree or higher | 0.006 | 0.069*** | 0.023*** | -0.006 | 0.017*** | -0.109*** |
| | (0.015) | (0.020) | (0.005) | (0.009) | (0.006) | (0.021) |
| Head is in bad health | -0.013 | 0.010 | 0.002 | 0.006 | 0.005 | -0.010 |
| | (0.010) | (0.014) | (0.003) | (0.005) | (0.004) | (0.014) |
| Spouse is in bad health | -0.033*** | 0.028 ** | 0.004 | 0.002 | -0.005 | 0.005 |
| | (0.009) | (0.013) | (0.003) | (0.006) | (0.004) | (0.014) |
| Number of children under 5 | -0.001 | -0.023*** | -0.001 | -0.002 | 0.003 | 0.024*** |
| | (0.007) | (0.009) | (0.002) | (0.004) | (0.003) | (0.009) |
| Number of adults | 0.007** | -0.012** | 0.001 | 0.005** | -0.004** | 0.004 |
| | (0.004) | (0.006) | (0.001) | (0.002) | (0.002) | (0.006) |
| Number of elderly | 0.026** | 0.006 | -0.003 | 0.002 | -0.002 | -0.029* |
| | (0.011) | (0.015) | (0.004) | (0.006) | (0.004) | (0.017) |
| Multiple couples within the hh | -0.019* | -0.030* | 0.004 | -0.001 | -0.001 | 0.047*** |
| | (0.011) | (0.017) | (0.004) | (0.006) | (0.005) | (0.017) |
| Subjective "basic needs" income | 0.007 | 0.019** | -0.002 | -0.003 | -0.001 | -0.019** |
| | (0.006) | (0.009) | (0.002) | (0.004) | (0.002) | (0.009) |
| Subjective socio-economic status | 0.001 | 0.003 | 0.002* | -0.003 | 0.006*** | -0.009** |
| | (0.003) | (0.004) | (0.001) | (0.002) | (0.001) | (0.004) |
| Dummy - house bigger than 100m | 0.009 | 0.011 | 0.003 | 0.005 | -0.002 | -0.026* |
| | (0.009) | (0.013) | (0.003) | (0.006) | (0.004) | (0.014) |
| Dummy - having a telephone | -0.0064 | 0.0260* | 0.0055 | 0.0014 | -0.0053 | -0.0212 |
| | (0.011) | (0.014) | (0.004) | (0.007) | (0.004) | (0.016) |
| Dummy - hh member migrated | 0.004 | -0.018 | -0.003 | 0.015*** | 0.001 | 0.000 |
| | (0.008) | (0.011) | (0.003) | (0.005) | (0.003) | (0.012) |

Table 3.4: Household's Income and Price Elasticities

|  | Meat | Clothing | Housing | Alcohol/Tobacco | Others | Food |
|---|---|---|---|---|---|---|
| Income (adult) | 0.976 | 1.649 | 0.904 | 0.433 | 0.632 | 0.961 |
| Income (children) | 1.061 | 1.154 | 0.810 | -0.008 | 1.621 | 1.016 |
|  |  |  |  |  |  |  |
| Meat | -0.956 | 0.026 | -0.003 | -0.049 | -0.006 | -0.049 |
| Clothing | -0.098 | -1.934 | 0.125 | -0.112 | 0.020 | 0.196 |
| Housing | 0.041 | 0.437 | -1.805 | 0.291 | 0.225 | 0.096 |
| Alcohol/Tobacco | 0.063 | -0.152 | 0.274 | 0.582 | -0.269 | 0.076 |
| Others | -0.085 | 0.433 | 0.512 | -1.084 | -1.415 | 0.386 |
| Food | -0.002 | 0.101 | -0.004 | -0.054 | 0.011 | -1.030 |

According to their size, clothing and housing are the most elastic good to price changes, while meat and food are the less elastic. As for income elasticities, which could estimated individually. For the adult, the most elastic good is clothing, while, as expected alcohol and tobacco have the smallest elasticity. For the child, the larger elasticity belongs to "other goods", all expected results since this category contains also educational and recreational expenses. From a policy perspective, this is an important result since it means that more resources devoted to children in the household would end in investment in human capital. The less elastic good is alcohol and tobacco, which is around zero. Since the child is under five, it is clear that he/she does not consume this good, so the elasticity should be expected to be null.

To properly interpret the parameters of the sharing rule, it must remembered that $m^a(\cdot) = m(\cdot)$ and $m^c(\cdot) = -m(\cdot)$, hence the estimated parameters refer to the sharing rule of the adult, while the same parameters' values have the opposite effect on the sharing rule of the child. Estimate of the parameters of the sharing function are reported in Table 3.5. They show that the ratio between the prices of adult and child clothing influences positively the propensity to allocate resources in favour of adults. This suggests that subsiding child specific goods would not have a positive influence on children's welfare because this would increase the price ratio reducing the share of resources of the child. The age differential between female and male (age ratio) influences negatively child welfare: small differences in age between the partners may indicate a balanced couple with more caring for their son/daughter. Even if to receive a monetary support (*Ndihma Economike*) has no influence on child welfare, attending a preschool programs influences the distribution of resources within the family in favour of the child. This evidence seems to favour in-kind

Table 3.5: Adult Sharing Rule Parameters in $m(\cdot)$

| | |
|---|---|
| Ratio between adult and child exclusive goods | 3.012*** |
| | (1.164) |
| Dummy for "other than Muslim or Orthodox" | 0.155 |
| | (0.152) |
| Dummy for child chronic illness or disability | 0.109 |
| | (0.152) |
| Dummy for both parents employed | -0.090 |
| | (0.145) |
| Ratio between spouse and head age | 1.460*** |
| | (0.548) |
| Ratio between spouse and head education | -0.108 |
| | (0.191) |
| Dummy for *Ndhime Ekonomike* beneficiary | 0.202 |
| | (0.144) |
| Preschool ("2" if all the children attend, "1" if at least one, "0" if nobody) | -0.624*** |
| | (0.106) |

benefits rather than cash transfers for the welfare of children, at least from an intra-household perspective. The NE cash transfer has proven to be quite non-effective in alleviating poverty (see Chapter II) and in supporting child welfare in families with young children, despite the fact that it is the only family allowance program operated in the country. It is possible to conclude that it has an equal negative effect on adult and child being, it is no effective for the household welfare as a whole and for the vulnerable individuals within the household.

To add further details to the analysis, figures 3.1 and 3.2, show the relative sharing rule, expressed as the ratio between the expenditure for child and total household expenditure $(\phi^c(\cdot)/y)$. These pictures are drawn by means of non-parametric regressions of the sharing rule on total household expenditure.

Figure 3.1 shows that share of child/adult expenditure goes from 21% for poor households to 39% for higher income households. This difference between poor and rich families is mostly driven by urban households, in fact Figure 3.2 shows that urban children in the richest deciles have the highest share of resources. The socio-economic status influences positively the attitude toward children for households living in the cities. Instead, in rural areas the distribution of resources within the family is constant along the distribution of the household welfare. This could be driven by the scarce development of rural areas in Albania: even if the household is rich, there may not be much to do for children with that money because of the absence of toy-shops, recreational and cultural activity centers, fashion shops.

Figure 3.1: Semi-parametric plot of the Child "Sharing Rule" by Total Expenditure
- Whole Sample
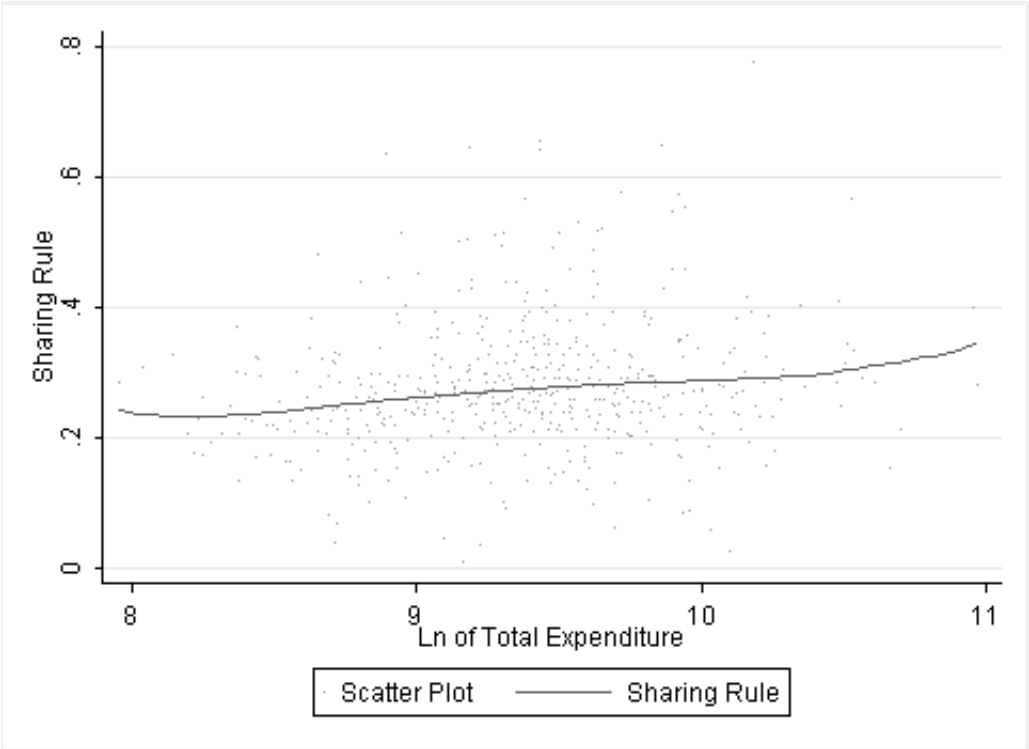
Figure 3.2: Semi-parametric plot of the Child "Sharing Rule" by Total Expenditure
- Urban/Rural
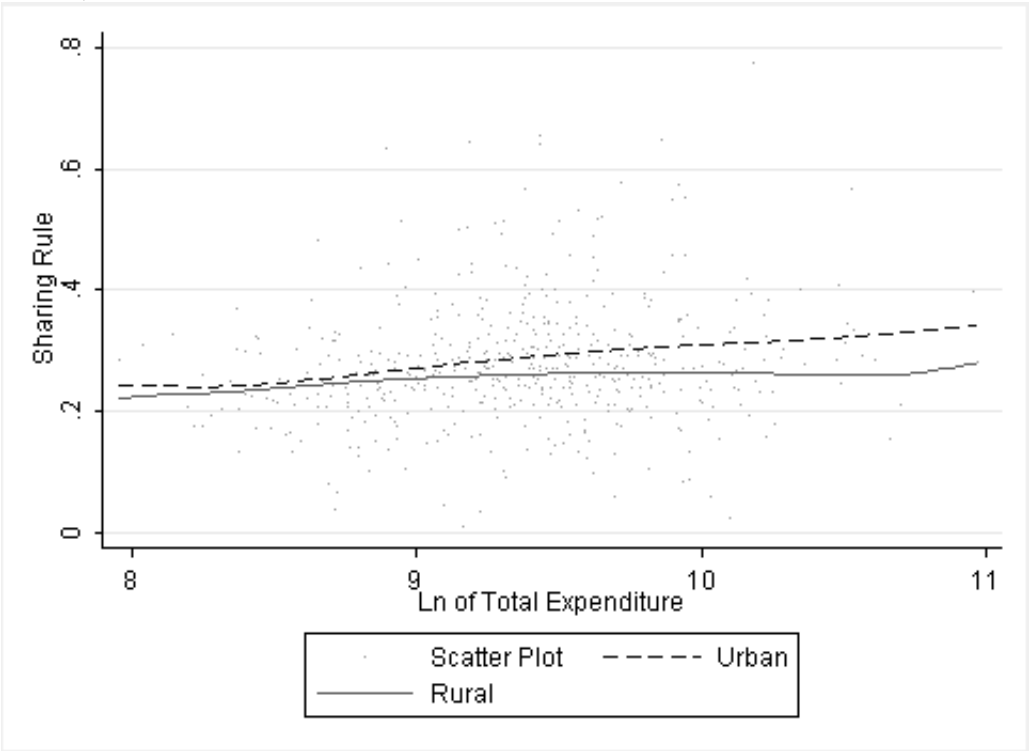
### 3.4.2 Child welfare, inequality and the effects of public transfers on young children

The estimated value of the "sharing rule" refer to an hypothetical equivalent household composed by two members: one adult and one child. In other words individual consumption of the adult and the child, the source of sharing rule identification, are rescaled to take account number of adults and children in the household. To say something more general about regarding children's welfare and the effects on intra-household inequality, it is necessary to recover the real individual expenditure of each child in the family, given the "sharing rule" that has been estimated.

In order to have proper measure of individual child welfare the following equation, which rescales back the "sharing rule" to obtain the true values of individual consumption taking into account the real household composition, since the "sharing rule" is estimated on an one adult/one child equivalent household:

$$S_c = \frac{\rho^c}{n_c \rho^c + n_a(1 - \rho^c)} \, y \tag{3.28}$$

where $\rho^c$ is the estimated child's relative "sharing rule", computed as $\phi^c/y$, $n_c$ and $n_a$ are the number of children and of adults in the household. The resulting value is the actual share of total expenditure of each child and can be used to perform poverty and inequality analyses of child welfare. In other words this is a sort of household specific equivalence scale, where the scales not only depend on household composition and/or characteristics, but also on intra-household resource distribution.

The following analysis focused on child welfare, ignoring what happens to adults. Moreover the sample is compose only by children under five, hence the results are very specific to this group of study and cannot be generalized to all Albanian children. A more general analysis with gender differentiation and a proper modeling of children of different ages is planned in a future work.

Figure 3.3 shows the distribution of child welfare using the estimated share of children's consumption (continuous line) and the per-capita consumption measure (dashed line), computed assuming an equal distribution among household's members. The kernel density distribution reveals that child welfare is distributed more unequally if also intra-household allocation is considered and that the average level

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Figure 3.3: Individual Child Expenditure Distribution: "Sharing Rule" vs. Per-capita Consumption
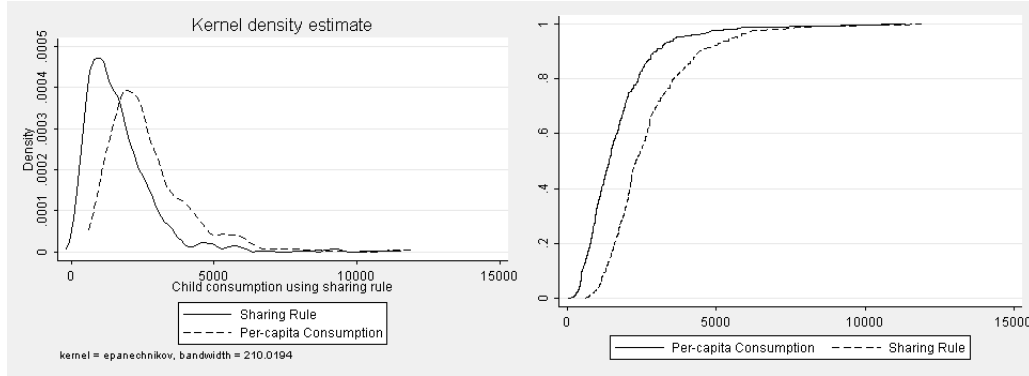


of child consumption is lower. The plotted Cumulative Distribution Functions of individual consumption shares and per-capita consumption show that taking into account intra-household inequality, child consumption is smaller both on average and along the whole distribution. Just to give a crude number, inequality in child consumption measured by the Gini index shifts from a 0.286 computed using per-capita consumption to a 0.382 computed using the "sharing rule". Intra-household inequality accounts for almost ten percentage points of the Gini index for children under five in Albania. The estimated "sharing rule" exploit the information on expenditure for children within the household. This procedure improves a simple per-capita index where an equal distribution of expenditure among household's members is assured.

Turning to policy issues, economists have traditionally been skeptical about in-kind income support policy measures, viewing cash transfers as superior in terms of recipients' utility, since unitary models assume that the resources within the household are allocated optimally according to individual needs. From the estimated "sharing rule" (Table 3.5), instead, shows that family allowances have no effects in the proportion of resources allocated to young children while preschool participation (an in-kind transfer) has a positive impact.

To explore further the effects of public transfers on children's welfare, figure 3.4 shows the children "sharing rule" $\rho^c$ of two groups of families: one with no child attending preschool and the other with at least one child currently attending preschool. The "sharing rule" of attending children is nearly constant along the consumption distribution and close to 0.4. On the other hand, the "sharing rule"

Figure 3.4: Semi-parametric plot of the Child "Sharing Rule" by Total Expenditure
- Impact of Attending Preschool on the "Sharing Rule"
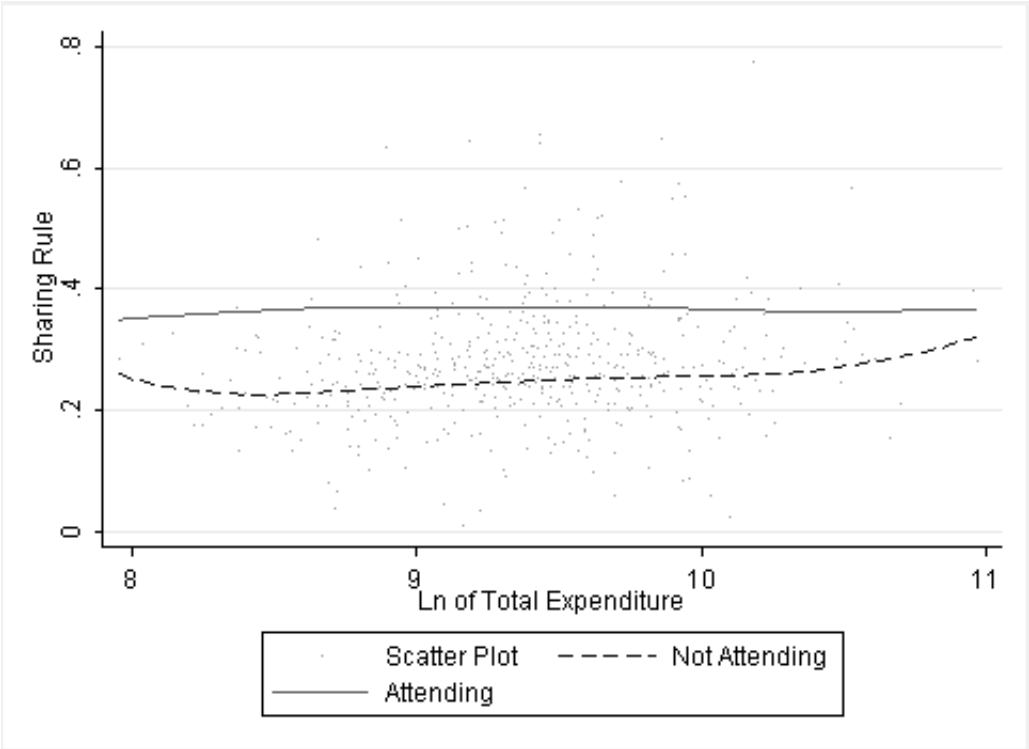
for non-attending children U shaped, where the lowest and highest income families seem to take more care for their children. The difference in the two "sharing rules" is significant along the whole income distribution, in line with the correspondent "sharing rule" parameter.

Figure 3.5: Semi-parametric plot of the Child "Sharing Rule" by Total Expenditure - Impact of *Ndihma Economike* on the "Sharing Rule"
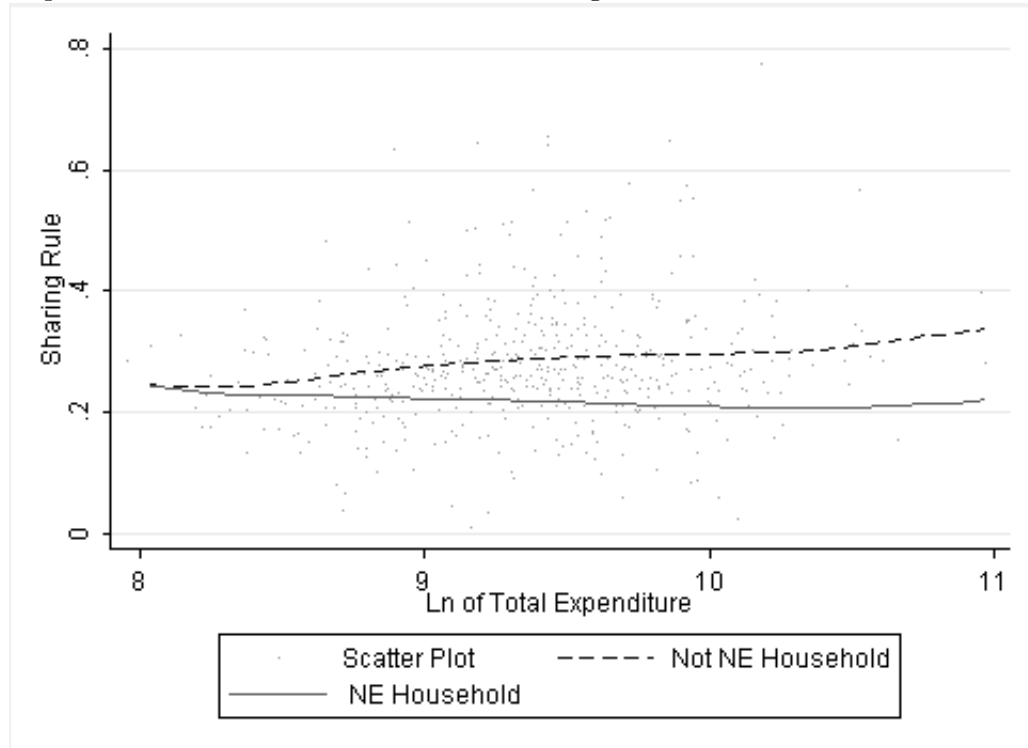


As to the effects on intra-household inequality of public cash transfers, Figure 3.5 shows that the poor household, well targeted and effectively in needs of a minimum income, do not show a significantly different behaviour whether they receive or not the benefit. Nonetheless, it seems that the share of aid that would go to the child is rather low, around 0.2. On the other hand, the "leakage" households (that is those households that are not poor but beneficiary) behave more egoistically toward their children with respect to similar households not receiving the benefit. These results show once again the negative effects of bad targeting on the program's effectiveness if one considers behavioural responses.

These considerations on cash transfers are partial, both because the reference sample is not representative of the whole Albanian population and because the analysis is subject to further improvements manly to take into account gender inequality in the estimation of the demand system. However, the use of collective models for welfare analysis is superior simply because there are too many aspects that with an unitary approach cannot be taken into account.

## 3.5 Concluding remarks

This Chapter applies the collective framework to the measurement of intra-household inequality to study child welfare in Albania. Albanian households have been deeply affected by the transition to a market economy from a regime that revolutionized the previous patriarchal tradition. The effect of the transition seems to be that of bringing back those traditional values, with a marginal role for women and negligence toward childhood, especially in rural area. At the same time, the household structure is changing deeply since migration has affected strongly family's equilibria. To open the family's black-box in this case is highly relevant to study individual welfare and evaluate the impact of public policies on the intra-household distribution of resources. The analysis is conducted on Albanian households with children under five, using consumption variables present in the Albanian Living Standard Measurement Survey.

Is has been shown that intra-household inequality measured on the share of expenditure plays an important role in determining child welfare. The Gini index for children increases when child welfare is computed using the "sharing rule" method versus the per-capita income method. It has also been tested whether receiving public transfers induces a modification of the "sharing rule" with respect to similar households who do not receive benefit from these transfers. A distinction has been made between cash transfers and in-kind transfers, the latter been represented by preschool attendance (which is paid by the government). In-kind transfers are likely to improve the condition of children within the household for all income level. On the other hand, means testing cash transfers do not seem to ameliorate the relative position of children within the household, while if cash transfers go to non poor families intra-household inequality between adults and children may worsen. This finding suggests that if properly conceived, in-kind transfers can be effective, both because well targeted and because they fulfil precise needs. Attending preschool for

young children is on the contrary a way of increasing share of resources dedicated to children within the family and this finding suggests the goodness of this particular in-kind transfer.

# Chapter 4

# Children's Schooling and Parental Migration: Empirical Evidence on the "Left Behind" Generation in Albania

This chapter investigates the long-term effects of parental migration abroad on the welfare of children left behind in Albania. Although parents' migration usually benefits children economically, the lack of parental care may cause relational and psychological problems that may affect children's welfare in the long term. The phenomenon of children left behind - mainly by fathers - is very relevant in Albania where migration has represented the only viable way to cope with increasing poverty and the absence of public resources for sustaining households' incomes. Using detailed information on family migration drawn from the Living Standard Measurement Survey for 2005, binary and multiple choice models are applied to evaluate the decision to send children to school and the school progression of older children and adolescents. A duration analysis of school participation with both discrete and continuous time models is then performed. The results show that past parental migration has a negative effect on children's welfare. On one side it negatively affects school attendance in the long run with higher hazard rates of school drop-out for the children left behind. On the other side, there are no effects on the share of expenditure devoted

to children in the household. These results are robust to the change of econometric techniques and model specifications.

## 4.1    Migration and child welfare

The implicit assumption in most of the existing studies on migration and child welfare is that migration only affects children's outcomes by alleviating household's budget constraints thanks to remittances. Several recent empirical studies have shown the positive effects of remittances on human capital investment. These studies follow the literature on the schooling of children in developing countries, which has emphasized the role of family income constraints in explaining differences in child welfare and human capital development. They extend this approach to migration studies, evaluating the impact of remittances as an additional source of income. For example Edwards and Ureta (2003) in a study based on data from El Salvador find that remittances reduce school dropout hazard rates and Calero et al. (2009) similarly show that remittances increase school enrolment and reduce child labour in Ecuador.

The theoretical literature on "beneficial brain drain" (Stark et al., 1997) suggests an additional point of view on the relation between migration and human capital: the prospect of higher returns to education in a foreign country boosts investment in human capital at home. In this line of research Stark and Wang (2002) develop a theoretical analysis of how migration can substitute the public provision of public subsidies for the formation of human capital.

On the other hand, recent studies provide mixed evidence on whether migration has a net positive or negative effect on child development. The positive impact on liquidity constraints deriving from income earned abroad are not without side effects. The parents' absence may be a psychological cost and change the decision-making process within the household. When a household member leaves, intra-household duties and responsibilities may change, and it may happen that children of migrant parents spend less time on school-related activities and that their involvement in work tasks increases. Thus, they may drop out of school or be held back a grade or more due to non-completion or unsatisfactory completion of their work. Recent empirical works have addressed this issue, finding negative impacts on child welfare that emerge during or after the migration process. Hildebrandt and McKenzie (2005) show that migration negatively affects the likelihood of breastfeeding and vac-

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cinations; similarly, Kiros and White (2004) find that children of migrant mothers in Ethiopia have less chances of receiving full immunization coverage than children of non-migrant mothers. McKenzie and Rapoport (2006) examining the impact of migration on educational attainment in rural Mexico, find that living in a migrant household lowers the chances of children completing high school. They attribute these outcomes to side side effects of migration and in particular to the fact that the absence of parents in the household due to migration could lead to reduce investment in their children's education. The WB (2007) claims there is a negative effect of migration on children's outcomes in Albania: in rural areas, daughters (aged 6-22 years) of permanent international migrants have lower enrolment rates than do those living in households without international migrants. It is also found that households with permanent international migrants spend less on education.

If the main theoretical argument for the negative impact on child welfare of migration is parental absence, the major limitation of the above analyses is that they are not able to disentangle the effect of parental migration from the child's own migration experience, mostly because of poor survey information. Liang and Chen (2007) address the phenomenon of children left behind, distinguishing children involved in permanent migration from children who remained at home in China: they find that the first have a higher likelihood of being enrolled in school. Cortes (2006), focusing on the Republic of Moldova, finds a statistical association between the increase in juvenile crime rates and the rise in the number of children left behind.

Parental migration when the child is left in the sending country has longer-term implications for child's development and their future life. These include, for example, changes in household structure and responsibilities leading to more pressure on older children to help in the household or to assist with agricultural duties and thus to neglect their schooling. Effects such as the break-up of the family and a lack of parental supervision and social interaction are also considered. The disruptive effects on family structure can change the leadership of the family, giving more power to older males who are less educated and less prone to understand the importance of investment in human capital as regards their grandchildren (Ginther and Pollak, 2004). Thus, the possible long-term effects of migration might cancel out the effects of a temporary improvement in household incomes.

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### 4.1.1 Parental absence and children's schooling

In the economic literature, the research on the consequences of parental absence has largely been focused on the aftermath of divorce and separation and therefore primarily considers the consequences of the biological father's absence from the child's home. Among these works is that of Ermisch (2008), which presents a theoretical model of households with a non-resident father dealing with the frequency of the child-father contact. The author argues that the contact of the non-resident father with his child is important because it may directly affect the child's welfare and have a longer-run impact on the child in terms of his/her emotional and cognitive development. The study by Del Boca (2003) focuses on the welfare of children with divorced parents and calls for extensive public support devoted to children made vulnerable by divorce, while Waldfogel (2002) evaluates outcomes for children younger than five years when mothers are kept out of the household by job constraints concluding that public supply of early childhood interventions can make a difference in improving outcomes for children. Theoretical and empirical analyses assessing from an economic point of view the impact on children of parental absence are also those considering the child's orphan status in developing countries. Among them, the empirical study by Yamano et al. (2006) on Uganda's orphans focuses on outcomes for primary school children and adolescents. They estimate schooling enrollment and school progression, finding greater negative effects for older children.

### 4.1.2 Children left behind by parents who have migrated abroad

Albania is a good field laboratory to study the effects of parental migration on children left behind, for several reasons. First, an analysis of schooling is of particular interest in Albania, since in the last fifteen years a significant drop in enrolment, especially for secondary school has been observed. Moreover the importance of family income in determining school enrolment and attendance increased during the 90s. According to Danaj et al. (2005) the drop in enrolment is due also to a lack of interest caused by the perception of low quality of education and distance to school, as well as new cultural barriers to female education[1]. Second, in the past fifteen

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[1]With the transition, the traditional patriarchal values of the Albanian household acquired renewed relevance with a dominant role of men over female and consequently less attention to the investment in human capital for girls. The household is the only institution in the country able to protect vulnerable individuals, however, at the same it has been experiencing big cultural changes

years, one in three households has experienced a migration abroad, with a positive impact on household consumption and poverty reduction due to a massive inflow of remittances (WB, 2007). Third, the share of children left behind by migrant parents is relevant. A recent analysis by UNICEF (2009) reports that the phenomenon is substantial in Albania and the Republic of Moldova. While in the latter country children are in general more affected, the incidence of the phenomenon is larger in Albania if one focuses only on young children. The main difference between the two countries is that the "left-behind" phenomenon in Moldova is associated with the so-called "care drain" to western European countries, which means that large numbers of children are being left behind by their mothers, probably with even tougher effects. In Albania, instead, migration has been male-dominated and what is observed in the majority of cases is a father's absence. An additional reason for choosing Albania is the absence of public subsides supporting households with children where members are emigrated abroad (see WB, 2006, Chapter I and Chapter II) which makes the possibility to isolate the effect of parental migration on children's outcomes easier.

Features of the data for Albania are fundamental for the scope of the analysis. Unlike other surveys, ALSMS 2005 allows to reconstruct the "left behind" episodes of children in the migration history of their parents. This gives two advantages with respect to previous analyses: the status of the child during parental migration can be consistently recovered, and even if the survey is cross-section, a retrospective information on migration is collected, so that the long-run effects of the phenomenon, can be effectively identified. Children's wellbeing indicators that may have been affected by the number and length of the episodes in which they have been left behind can be reconstructed. Following Pudney et al. (2006), the present underinvestment in human capital, in the form of hazard rate of dropping out of school, is used to proxy vulnerability to poverty. The focus is on preschooling, primary and secondary school attendance and a grade-for-age indicator for children and adolescents estimating the risk of school drop-out using survival analysis. Additionally the impact of parental migration on expenditure devoted to children living in the household is evaluated to asses the monetary welfare of children. The absence of young adults emigrated abroad may shift the precarious equilibrium of tradition and modernity within the

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in the last fifty years, with consequent problems for women and the youth in the always difficult balance between traditional norms and modernity (see Gjonca et al., 2008, for an analysis of the evolution of Albanian household).

Albanian household and, as consequence a reduction on children-related expenditure may be observed.

The analysis is conducted on three separate groups: children under the age of five, primary school-age children and adolescents. As to the econometric method, probit models to evaluate the decision to send young children to pre-school are applied. The school progression of older children and adolescents is then studied using an ordered choice model. Finally, the analysis focused on schooling attendance and performed a survival analysis of participation to schooling.

The study is organized as follows: Section 4.2 describes the data and variables used in the analysis, Section 4.3 explain the econometric tools used and Section 4.4 shows the results. Section 4.5 concludes.

## 4.2   Data and variables

The main reason for the lack of research on the impact of migration on children is the scarcity of detailed data in the same survey on both international migration at the household level and children's welfare within the family. The data for Albania used in this study contain detailed information on the children-left-behind by parents who migrate abroad, with retrospective information that allows to carry out a dynamic analysis of the phenomenon and to explore its long-term effects. The analysis of this chapter is based on the 2005 Albanian Living Standards Measurement Study survey. Unlike other household surveys, the LSMS provides unusually detailed information on the migration of both current and former household members. Moreover, the Albanian LSMS includes information on a wide range of demographic and socio-economic characteristics at household and individual levels, along with a community questionnaire with information on local services and socio-economic conditions. A total of 3,640 households were interviewed, corresponding to a national representative sample of 17,302 individuals, 33.75% of which are children (under 18 years old). Even if the questionnaire is very complete and contains detailed information on education, health, social capital and consumption expenditure, the survey has a limited focus on children, and it is difficult to recover qualitative child wellbeing indicators. For instance, there is good information on service availability, quality and appropriateness, but limited information on the demand for schooling and factors influencing this demand. However, the migration module provides detailed information on the

individuals' migration history and behaviour toward children during the migration episodes.

A sample of 5,834 children is drawn from the 2005 LSMS, and the analysis is conducted on three different sub-samples. First, a sample of 783 children aged from 3 to 5 (pre-school age) of whom 56% are boys, 41% were attending pre-school in 2005 and 18% had been left behind by a parent migrated abroad for at least one month during their lives. Second, a sample of 2,575 compulsory school-age children equally distributed between boys and girls, with an enrolment rate of 90%, who 22% of whom had been left behind. Third, a sample of 1,898 adolescents aged from 14 to 18, 67% of whom were attending secondary school and up to 19% had experienced an episode of parental absence due to parental international migration.

### 4.2.1 Child consumption, school attendance and school progression

The chosen children's wellbeing indicators that may be affected by the "left-behind" episodes relate to consumption and education (see in Table 4.1). The per capita child consumption indicator is the sum of household expenditure dedicated to children (wear, footwear and education) divided by the number of children in the household. Using this indicator a dummy variable is created, taking value "1" for the deprived children and "0" for others[2]. A better solution would be to use monetary child welfare identified with collective models as in Chapter III for 2002. However this cannot be done with 2005 because of the lack of detailed data.

Preschool attendance is used as an indicator of multidimensional child wellbeing. Empirical studies focusing on developed countries have shown the importance of early childhood programs for skill formation. For example, Heckman and Masterov (2007) show that investing in early childhood programs is a kind of public investment not affected by the equity-efficiency trade-off. The authors also focus on social benefits of pre-school, especially for disadvantaged children. In developing countries, pre-school attendance is typically considered important for monitoring children's health and nutrition status, especially when children are poor (see Behrman et al., 2004; Alderman et al., 2006). Two types of variable are used: the first is a dummy variable taking value "1" if the child is currently attending a pre-school program; the second

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[2]We perform a poverty analysis by age groups using a relative poverty line at one half of the median. The variable indicates those children who are deprived in terms of child expenditures relatively to others of the same age.

Table 4.1: Descriptive Statistics of Main Variables by Sub-samples of Children

| | Children 3-5 years old | | Children 6-13 years old | | Children 14-18 years old | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| **School Attendance** | | | | | | |
| Currently attending preschool | 0.414 | (0.493) | | | | |
| Currently attending primary school | | | 0.902 | (0.296) | | |
| Currently attending primary school with delay | | | 0.219 | (0.414) | | |
| Currently attending secondary school | | | | | 0.671 | (0.469) |
| Currently attending secondary school with delay | | | | | 0.144 | (0.352) |
| **Child's Characteristics** | | | | | | |
| Age in months in 2005 | 54.120 | (10.317) | 120.310 | (25.505) | 191.823 | (16.938) |
| Sex ("1" for male children) | 0.563 | (0.496) | 0.509 | (0.500) | 0.498 | (0.500) |
| Mother has a job | 0.179 | (0.383) | 0.242 | (0.429) | 0.256 | (0.436) |
| Mother is self-employed | 0.267 | (0.443) | 0.304 | (0.460) | 0.301 | (0.459) |
| Father is employed | 0.599 | (0.490) | 0.601 | (0.490) | 0.536 | (0.499) |
| Father is self-employed | 0.211 | (0.408) | 0.211 | (0.408) | 0.244 | (0.430) |
| Child poverty indicator (3-5 years old) | 0.367 | (0.482) | | | | |
| Child poverty indicator (6-13 years old) | | | 0.340 | (0.473) | | |
| Child poverty indicator (14-18 years old) | | | | | 0.342 | (0.474) |
| **Migration related Child's Characteristics** | | | | | | |
| Months left behind | 1.100 | (3.305) | 8.494 | (24.977) | 11.800 | (32.924) |
| Time (months) from the last parent's return | 1.943 | (8.014) | 0.272 | (2.060) | 0.434 | (3.320) |
| Months left behind while attending schooling | | | | | | |
| **Household's characteristics** | | | | | | |
| Children under 18 in the household | 2.621 | (1.215) | 2.872 | (1.167) | 2.456 | (1.253) |
| Female hh head | 0.054 | (0.225) | 0.064 | (0.245) | 0.062 | (0.241) |
| HH social capital (n of groups belongs to) | 0.294 | (0.652) | 0.301 | (0.680) | 0.329 | (0.719) |
| Log of pro-capita consumption (no education and child wear) in 2005 | 7.612 | (0.557) | 7.619 | (0.528) | 7.666 | (0.559) |
| HH has ownership of dwelling | 0.871 | (0.335) | 0.899 | (0.302) | 0.911 | (0.285) |
| Log of monthly remittances (lek) | 1.668 | (3.473) | 1.760 | (3.600) | 2.157 | (3.905) |
| Log of NE transfer | 1.876 | (3.315) | 1.786 | (3.258) | 1.555 | (3.101) |
| Distance from the nearest school | 14.637 | (11.923) | 14.921 | (13.090) | 14.177 | (11.945) |
| Distance from the nearest bus stop | | | 17.130 | (22.900) | 17.030 | (21.778) |
| **Community's characteristics** | | | | | | |
| Preschool exists in the community | 0.788 | (0.409) | 0.841 | (0.364) | 0.523 | (0.499) |
| Primary school exists in the community | | | | | | |
| Secondary school exists in the community | | | | | | |
| Observations | 783 | | 2575 | | 1898 | |

variable is a truncated variable reporting hours of pre-school attendance during the week[3]. This information is recorded only for children between 3 and 5 years old which leaves children younger than three out of the analysis[4].

For school attendance of children aged 6 to 13 and of adolescents, "school progression" is the chosen indicator of education. Following Orazem and King (2008), first school participation is analysed using the questions on both enrolment[5] and attendance[6]; then the dichotomic variable is transformed into a variable multinomial for not attending, attending with delay, in-time attendance [7]; for the scope of the analysis, it is important to capture these differences. Following the authors the outcome of enrollment with delay reflects a confluence of factors including supply side problems, school governance and household demand[8]. Within the primary school sample, 9% of children are not attending school at all and up to 22% are attending with delay, while in the adolescent sample the share who does not attend a secondary school program is 32%, and that of those who attend with delay is 15%.

To derive an indicator of child social skills, detailed survey information on social capital is used like, for instance, the number of informal groups the household is member of, or the number of close friends. Unfortunately, this module is responded by the household head, and this variable refers to the whole family. Thus, it is not a specific proxy children's networks or social capital. Nevertheless social capital may be used as household feature among the explanatory variables.

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[3]The common use of enrolment status as a dummy dependent variable in modelling school attendance has been criticized recently because it collapses the schooling decision into a dichotomous variable reflecting different number of hours allocated to school (Orazem and King, 2008).

[4]Preschool attendance is also relevant for younger children (Doyle et al., 2009); however, in Albania, there are no public programs devoted to children at this age

[5]"Did you enroll in school this academic year?"

[6]"Are you currently attending school?"

[7]Orazem and King (2008) note that two children of the same age who are both enrolled could be in different grades because one may have started school later or may have dropped out for a short time or repeated a year. To proxy delayed attendance variable indicating the "theoretical" maximum number of months a child should have been attending at each level and year, compared it with the effective number of months each child has been attending school to reach their level. The multinomial variable takes "0" if the child is not attending school, "1" if he/she attending but has experienced delayed enrollment or repeated a year, and "2" for in-time enrolment.

[8]As noted in the previous section when a household member leaves, intra-household duties and responsibilities may change, and children of migrant parents may spend less time on school-related activities.

### 4.2.2 Migration's history and the retrospective data on the "left behind" episodes

The explanatory variables applied in this analysis may be classified into five groups: variables that have to do with a child "left behind" episode, variables related to children's individual characteristics, variables regarding household socio-economic conditions, territorial variables and policy variables.

The main indicator of a left-behind episode is the variable "months of left behind", shown in table 4.1. The variable has been constructed using from the module on past migration episodes, where returned individuals returned are asked if their children were living with them abroad or if they had remained in Albania[9]. The durations of the most recent and of the first migration episodes are recorded, so that they can be summed up to derive the total amount of months in which a child has been left behind. The variable has been created without distinguishing between maternal and paternal migration. The observations referring to absence of the mother are too few to be used separately from fathers absence so they are pooled. Children left in the past by parents who had returned (and were present at the moment of the survey) amount to 1,160. Moreover, the survey informs if any of the non-present members (children or spouses of the head of household) were living away from their children at the moment of the interview. In integrating the variables of past "left behind" episodes with the information on children presently left behind, almost all the "left behind" episodes from child birth[10] to the moment of the interview have been recovered. Additionally, this variable, when used for children older than 5[11], has been adjusted for school-age children, eliminating the left-behind episodes that may have occurred before school creating th variable "months left behind while attending school" (Table 4.1). The variable has been transformed to "0" for these cases to control for temporal consequentiality when estimating the effect of a left-behind

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[9]The question is "Were any of your children living with you during your stay abroad?", thus, for those who responded "No, lived in this household", it is sure that all of the children remained at home during the migration. Inversely, for the 171 individuals who responded that any of their children had emigrated with them, it was not possible to control for brothers and sisters' remaining at home. Because of the 171 "yes" cases, 141 referred to the migration of both parents, it can be assumed that nearly all of the children were with the parents in those cases. In conclusion, there are 30 cases in which the number of children left behind may have been underestimated.

[10]The migration episodes that are considered in the analysis are only those after the beginning of Albanian transition (1990)

[11]For children older than 5 the survey reports information on the year they had left school.

episode on schooling attendance[12].

A limit of the survey is that the question about children left behind was asked only for the most recent episode of migration and for the very first. It is not possible to know if the father or the mother have left their child more than twice. For those individuals in the survey who experienced other migration episodes between the first and the last, it is not know if they had children who had been left behind[13].

Among the individual variables, are age in months, gender, years of pre-school attended for school-age children, educational background and the employment status of the mother and father. Cultural and religious variables, together with main household characteristics, are also used in the analysis. The logarithm of per-capita household consumption is among them, from which child expenditure (education and wear) has been eliminated to avoid problems of endogeneity, and also value of remittances during the year of the survey[14]. Variables indicating the distance of the household from many services are also used.

As residence variable, dummies for "Tirana", "coastal rural/urban area" , "central rural/urban" area and "mountain urban/rural area" according to the first stratification unit of the survey sample are used[15].

The effect of public intervention is also controlled for using two main variables. The first is a dummy for the child who lives in a household that participates in a mean tested family allowances program (the *Ndhdime Ekonomike*). The second is a dummy for the presence of the pre-school, primary school or secondary school in the municipality[16].

An additional variable is the occurrence of a particular shock that may have affected the household during the transition. Households are requested to report the exact year of the shock. In particular, the following shocks are taken into account:

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[12]For this adjustment the question regarding the last year of school attended by those who have dropped out has been used.

[13]However, only 4 children in the sample who had been left behind the first and the last time have their parents with a third migration episode, and thus all periods of parental absence, except these 4, for which the duration of parental absence may have been underestimated, cab be reasonably be assumed to have been captured.

[14]Note that this variable being current, not controlling for the economic effect of past migration on present child wellbeing. The variable "remittances" is used here to control for the general economic effects of migration, which are also likely to be persistent over time thought savings.

[15]It is not possible to use a smaller territorial unit in order to keep statistical properties of a large sample in the econometric analysis

[16]This information is shown from the community questionnaire.

the death of an earner within the family, a job loss for the household head, the physical destruction of the house and significant monetary losses due to the financial "pyramid crisis" of 1997.

The next session, describes the estimation strategy. School attendance is modelled first, and then the child's welfare based on consumption.

## 4.3   Estimation strategy

Modelling school attendance required a specific attention for each grade of education. Preschool attendance is clearly different from modelling the choice of abandoning secondary school. Moreover, the issue of late enrolment or delayed progression needs further special attention. For these reasons a series of estimates with different models are proposed, with the aim of robust evidence on the correlation between migration and the state of children left at home.

Children in the pre-school age are first considered. Since pre-school attendance is not mandatory in Albania, the choice of sending children at pre-school is made by parents. The choice to be made is twofold: sending or not the children to pre-school and for how many hours. Moreover, there could be an endogeneity problem with the labour supply choice of the parents, especially the mothers'. To take account of these issues three models are estimated. First, participation to pre-school is estimated using a binary outcome model, namely, a Probit model (Bliss, 1935) . The outcome variable is pre-school attendance for children aged 3-5, defined as

$$Y = \begin{cases} 1 & if\, childred\, attends\, preschool \\ 0 & if\, not. \end{cases}$$

The probability of choosing to send children to pre-school depends on a set of explanatory variables $X$

$$Pr[Y = 1|X] = \Phi(X'\beta),$$

where $\Phi$ is the cumulative distribution function of the standard normal distribution and parameters $\beta$ are estimated by Maximum Likelihood.

The Probit model, is naturally extended to the Tobit model (Tobin, 1958), which

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is used to model the choice of pre-school hours. Here the choice is not restricted to a binary outcome, as in the case of pre-school attendance, but it cannot be estimated with an OLS since it is lower bounded to zero (it is not possible to observe negative hours of pre-school attendance). The Tobit model extends the Probit allowing for the outcome variable $Y$ to take other values than 1 or 0, according to an unobserved latent variable $(Y^*)$:

$$Y = \begin{cases} Y^* \ if \ Y^* > 0 & hours \ of \ preschool \\ 0 \ if \ Y^* \leq 0 & if \ child \ do \ not \ attend \ preschool, \end{cases}$$

where the latent variable $Y^*$ depends on a sex of regressors $X$ according to

$$Y^* = X'\beta + u.$$

The parameters $\beta$ are again estimated by Maximum Likelihood. The results of the Probit and Tobit models estimates are presented in Table 4.2.

To look at the possible endogeneity problem of the mother's labour supply choice, a bivariate Probit model is estimated. Two choices are modelled simultaneously in such a way that the two binary outcomes, say $Y_1$ and $Y_2$, depend on two latent variables $Y_1^*$ and $Y_2^*$ that can be correlated, i.e.

$$\begin{cases} Y_1 = 1 & if \ Y_1^* > 0 \\ Y_2 = 1 & if \ Y_2^* > 0 \end{cases}$$

where

$$\begin{cases} Y_1^* = X'\beta_1 + e_1 \\ Y_2^* = X'\beta_2 + e_2 \end{cases}$$

and the error terms $e_1$ and $e_2$ are distributes as a bivariate standard normal variable

$$\begin{pmatrix} e_1 \\ e_2 \end{pmatrix} | X \sim N \left( \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \sigma \\ \sigma & 1 \end{pmatrix} \right).$$

Estimates, obtained by Maximum Likelihood, are presented in Table 4.3 .

For older children, the problem becomes more complicated. Primary school is mandatory, hence participation should be almost universal. However, several cases of delay in school participation and a few of school drop out are observed. On the other hand secondary schools are not mandatory, hence many more cases of drop out are observed. These differences suggest that it is safer to conduct two separate analyses for mandatory school children (aged 6 to 13 years old) and secondary school children (aged 14 to 18 years old). For both groups however the estimation techniques are the same.

For these children, school participation is modelled in three stages: 0 for non-participation, 1 for delayed participation and 2 for regular participation. This variable is called "school progression". The idea is to have different degrees of failure of school participation, which include a delay in the completion of studies and the departure from schooling.

This situation is modeled using an Ordered Logistic Regression (McCullagh, 1980) and Multinomial Logistic Regression (Luce, 1959). The difference between the two is that Ordered Logit assumes a hierarchy for the dependent variable categories meaning, for example, that 1 is better than 0 and 2 is better than 1. This seems to be the case given how the schooling participation variable is constructed, but the processes of school drop out and delayed progression may be independent. For this reason, the Multinomial Logit model has also been estimated, setting the baseline state as 2 (regular schooling participation) and estimating the probability of quitting or delaying school using separate equations. The use of Multinomial Logit model confirms Ordered Logistic's results thus it has been chosen to use the last one assuming that a hierarchy for the dependent variable categories meaning (enrolment with delay is better than drop-out). The results for both primary school children's and secondary school children's schooling progression are presented in Table 4.5 .

To complete the statical analysis, the possible effects that being left behind could have on their welfare are studied; welfare is expressed here as a dummy variable for deprivation depending on per-child expenditure on children goods (see Section II for details). Results are presented in Table 4.6.

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### 4.3.1 Survival in the school system using duration models

In order to deepen the analysis of the relation between school drop out and having been left behind, a series of duration models have been estimated (see Jenkins, 2004, for a exhaustive review) in line with the work of Edwards and Ureta (2003) who estimated the impact of remittances on school dropout. This choices has been dictated by the actual structure of the data. In fact, differently by Edwards and Ureta (2003) who not dispose of retrospective data, both the relevant episodes, namely dropping out of school and having been left behind can be recovered from the migration history of parent and education history of children available in the Albanian LSMS. With these data, the choice of duration models applied to the schooling period appears particularly appealing.

The observed lifetime corresponds to the time that the children spend in school (spell), and death corresponds to the observed drop out on the part of the child (failure). The probability of quitting the spell of education (failure) may be influenced by a number of exogenous factors.

Before proceeding to describe the estimated models, it is useful to present the basic concepts related to survival analysis to clarify the differences between them. The length of a spell for an individual is stochastic and denoted by $T$. Its cumulative distribution function is $F(t) = Pr(T \leq t)$, and its probability density function is $f(t) = \partial F(t)/\partial t$. The survival function $S(t)$ is defined as $1 - F(t)$ and denotes, in a broad sense, the probability of survival up to $t$.

The hazard function can be defined as the rate at which the spell is completed at time $t$ given that it has not been completed before $t$, i.e.

$$\theta(t) = \frac{f(t)}{1 - F(t)} = \frac{f(t)}{S(t)}.$$

The value taken by the hazard function at a particular value of $t$ is called the hazard rate.

The hazard function is in some sense the heart of econometric duration analysis for several reasons. For instance, the fact that in economics the focus is often placed on the rate at which the subject leaves the state at $t$, in particular in trying to explain the hazard at $t$ in terms of external conditions, suggests that one should build all theory around $\theta(t)$. Whatever the reason, the consequence is that different models

of duration arise from different specifications of the hazard function $\theta(t)$.

The first fundamental problem in estimating $\theta(t)$ is whether $t$ should be considered a continuous variable or a discrete variable. In principle, almost all spells of interest would be a function of continuous time but are recorded in a convenient time span as days, months or years. In practice, discrete time modelling is used when the length of the spell takes few values, such that a continuous time modeling could be a bad approximation of the data generation process. Secondly, $\theta(t)$ may be characterized by the shape of the functional form chosen. This can be parametric, as in the Weibull, Exponential, Gompertz, Log-Logistic, Lognormal and Generalized Gamma models or semi-parametric.

A particular class of duration models is called "proportional hazard". These models are characterized by the fact that they satisfy a separability assumption

$$\theta(t, X) = \theta_0(t) exp(\beta' X) = \theta_0(t)\lambda$$

where $X$ is a vector of covariates; $\theta_0(t)$ is the "baseline hazard function", which depends on $t$ but not on $X$ (and hence is common to all persons); and $\lambda$ is a person-specific non-negative function of covariates $X$, which scales the baseline hazard function. When the estimation of $\theta_0$ is conducted non-parametrically, the model is called Cox's Proportional Hazard model (Cox, 1972). This model is particularly attractive because of the flexibility in the shape of the baseline hazard function and is chosen for the first estimates of school attendance. The results, estimated by Partial Likelihood, are presented in Table 4.7.

One of the possible weaknesses of this approach is that it may not take sufficiently into account the heterogeneity of individuals (often referred to as frailty). If the vector of covariates $X$ is not sufficient to explain the differences in hazard rates among individuals, estimates may be biased. Frailty models overcome this issue by adding an individual-specific error term, as in the random intercepts model. In order to estimate this additional error term, a functional form for its distribution should be specified (common options are the Gamma function and the Inverse Gaussian distribution). Because a Cox estimator with a full frailty implementation is not yet available, the Weibull model is used here to look into the heterogeneity problem. The estimates are presented in Table 4.7.

Another possible source of error is the fact that some individual characteristics

may vary over time. In this case, children have been left behind in a particular moment in their lives, so their hazard rates may have changed in response to this variation. This problem can be solved by including time-varying variables in the estimation of duration models. If a child has been left for one year, than their parent may come back, and leave again and so on. If this is the case, the previous models are likely to be a poor approximation of reality. A possible solution consists in estimating a discrete time duration model that, takes into account the precise point in time when the child has been left behind during the spell of education.

The results of the discrete time Cox model[17] are presented in Table 4.8[18].

The next section describes the empirical strategy and presents the results by children's age groups.

## 4.4 The impact of parental migration on children's and adolescents' schooling

This section presents the estimates of the impact of being left behind on some children's wellbeing indicators by age cohort. Section 4.4.1 deals with preschool attendance of young children controlling for the joint decision of labour supply of the mothers. Section 4.4.2 presents the estimated of school drop outs and delay for children in primary and secondary schools. Section 4.4.3 describes how being left behind may influence the probability of being deprivated in terms of child-related expenditure. Finally the results of the duration analysis of school attendance are presented in Section 4.4.4.

### 4.4.1 Preschool attendance and mother's labour

Table 4.2 shows the results for the equations modelling the decision to send young children to pre-school. It turns out that there is no influence of parental migration episodes on preschool attendance and hours of pre-school. The age of the child is a relevant variable in the model: as expected older children are more likely to attend

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[17]In order to estimate discrete time duration models, it is necessary to reorganize the dataset in panel form, such that each individual is observed for each time point.

[18]The variable has been corrected in this case for the contemporaneity of the effects and takes the value "1" for a left-behind episode the year observed in the data and the next year as a lagged variable.

Table 4.2: Preschool Attendance (children 3-5 years old)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Probit (Marginal Effects) | | Tobit (Coefficients) | |
| Sex | -0.028 | (0.039) | -1.313 | (1.823) |
| Age in months in 2005 | 0.008*** | (0.002) | 0.340*** | (0.089) |
| Months left behind | 0.000 | (0.006) | -0.002 | (0.299) |
| Time (months) from the last parent's return | 0.004 | (0.003) | 0.142 | (0.116) |
| HH is muslim | 0.051 | (0.040) | 1.577 | (1.957) |
| Children under 18 in the household | 0.016 | (0.018) | 0.861 | (0.883) |
| HH number of elder | 0.009 | (0.026) | 0.451 | (1.257) |
| Mother's education (level) | 0.057*** | (0.017) | 2.303*** | (0.770) |
| Father's education (level) | 0.024 | (0.015) | 1.536** | (0.697) |
| Female hh head | -0.110 | (0.076) | -5.817 | (4.199) |
| HH social capital (n of groups belongs to) | 0.027 | (0.029) | 0.447 | (1.359) |
| Log of consumption (no education and child wear) | 0.045 | (0.041) | 2.317 | (1.969) |
| HH has ownership of dwelling | 0.107** | (0.053) | 5.323* | (2.789) |
| Distance from the nearest school | -0.012*** | (0.002) | -0.536*** | (0.102) |
| Log of monthly remittances (lek) | 0.003 | (0.006) | 0.004 | (0.276) |
| Log of NE transfer | -0.004 | (0.007) | -0.245 | (0.318) |
| Mother has a job | 0.008 | (0.055) | 2.713 | (2.529) |
| Mother is self-employed | 0.079 | (0.055) | 1.777 | (2.606) |
| Father is employed | 0.096* | (0.050) | 5.107** | (2.484) |
| Father is self-employed | -0.001 | (0.063) | 0.507 | (3.052) |
| Preschool exists in the community | 0.259*** | (0.042) | 14.229*** | (2.698) |
| Tirana | -0.141** | (0.065) | -4.924 | (3.559) |
| Cost urban | 0.033 | (0.075) | 4.063 | (3.446) |
| Cost rural | 0.047 | (0.068) | 2.889 | (3.221) |
| Central urban | 0.167** | (0.075) | 8.616** | (3.424) |
| Central rural | 0.044 | (0.065) | 2.139 | (3.083) |
| Mountain urban | -0.042 | (0.068) | -1.455 | (3.328) |
| Constant | | | -62.953*** | (17.946) |
| Observations | 783 | | 783 | |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

preschool. Logistical constraints are important, as confirmed by the negative sign of "distance from nearest school". Children of educated parents are more likely to attend school and for more hours, while children living in a household where the head is female meet with more difficulties[19], probably for budgetary reasons. The major determinant among policy variables is the presence of the service in the community, confirming that the public supply of preschool facilities is inadequate. The "left behind" episodes are not significantly related to the difficulties of attending early-childhood programs. Economic variables seem to be not significant with the exception of father employment status. This is probably related to the fact that preschooling is free of charge, even tough there are costs due to inadequacy of supply and corruption which reduce the equality in accessing the service, limiting the probability of attendance of poor children. Indeed, long terms wealth indicators are relevant, as shown by the positive sign of "dwelling ownership" (a proxy of wealth).

Neither the labour force participation of the mother seems not to be a determinant of the child's preschool attendance. Preschool facilities have been universal during the communist period but have dropped drastically during the transition, and some analyses have argued that the phenomenon is strictly related to the decrease in female labour force participation. Some others have stressed the responsibility of the government, which has drastically reduced the share of expenditure allocated to preschool. Table 4.2 shows that the main constraints are on public policy and that the mother's labour status is not a determinant of preschooling choice. In order to robustly controlling this result, preschool attendance is estimated jointly with mothers' participation in the labour market. The results of the bivariate probit regression (Table 4.3) and the "Likelihood-ratio" test (which yields a "rho" value not significantly different from zero) shows that the two phenomena are not correlated (estimating preschooling with a joint model does not change the results of Table 4.2.). In the equation for the mother's labour force participation, the negative significance of the child "left behind" experience may suggest that the phenomenon of male-dominated migration may have negatively influenced female labour[20].

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[19]Preschool enrolment in the sample are only 41,8% of children.

[20]The result is consistent with the findings of Mendola and Carletto (2008) where the authors found a negative effect of migration on female paid work and a consequential increase in female unpaid work

Table 4.3: Preschool Attendance and Mother's Labour (Bivariate Probit Model)

| | Child Attendance | | Mother Labour | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Sex | -0.073 | (0.100) | -0.072 | (0.126) |
| Age in months in 2005 | 0.020*** | (0.005) | 0.007 | (0.006) |
| Months left behind | 0.001 | (0.016) | -0.022 | (0.025) |
| Time (months) from the last parent's return | 0.009 | (0.007) | 0.006 | (0.009) |
| HH is muslim | 0.134 | (0.106) | 0.158 | (0.139) |
| Children under 18 in the household | 0.042 | (0.048) | -0.177*** | (0.067) |
| HH number of elder | 0.024 | (0.069) | -0.078 | (0.087) |
| Mother's education (level) | 0.149*** | (0.042) | 0.321*** | (0.047) |
| Father's education (level) | 0.061 | (0.038) | 0.043 | (0.045) |
| Female hh head | -0.299 | (0.220) | 0.107 | (0.270) |
| HH social capital (n of groups belongs to) | 0.073 | (0.076) | 0.316*** | (0.087) |
| Log of consumption (no education and child wear) | 0.116 | (0.106) | -0.204 | (0.136) |
| HH has ownership of dwelling | 0.290* | (0.151) | 0.290 | (0.187) |
| Distance from the nearest school | -0.030*** | (0.005) | -0.012* | (0.007) |
| Log of monthly remittances (lek) | 0.007 | (0.015) | -0.033* | (0.020) |
| Log of NE transfer | -0.011 | (0.017) | -0.054** | (0.025) |
| Mother is self-employed | 0.201 | (0.140) | -0.843*** | (0.234) |
| Father is employed | 0.251* | (0.133) | -0.116 | (0.167) |
| Father is self-employed | -0.003 | (0.164) | -0.152 | (0.230) |
| Preschool exists in the community | 0.743*** | (0.141) | -0.290 | (0.188) |
| Tirana | -0.388** | (0.193) | 0.124 | (0.224) |
| Cost urban | 0.085 | (0.192) | 0.177 | (0.216) |
| Cost rural | 0.119 | (0.175) | -0.065 | (0.227) |
| Central urban | 0.423** | (0.191) | 0.063 | (0.224) |
| Central rural | 0.113 | (0.165) | -0.415 | (0.264) |
| Mountain urban | -0.113 | (0.183) | -0.166 | (0.230) |
| Constant | -3.435*** | (0.960) | 0.352 | (1.209) |
| Observations | 783 | | 783 | |

*** p<0.01, ** p<0.05, * p<0.1

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### 4.4.2 Factors influencing drop outs and delays in primary and secondary school

International migration on the part of the father negatively influences his child's schooling in the long run, as suggested by the literature on the effects of parental absence (see Section 4.1). The results for primary school children and adolescents (Tables 4.4 and 4.5) show negative and significant coefficients for left-behind duration. An additional month left behind increases of 0.8% the probability of dropping out (outcome 0) and of 1% the probability of attending with delay, while it reduces the probability of in-time enrolment by 1.7%.

For adolescents the impact is higher: an additional month reduces by 16% the probability of attending secondary school and increases of 15% the probability of not being enrolled. The negative impact of the phenomenon is reduced if it is far in the time, as shown by the coefficient of "time since the last return", whereas the effect is increased with the length of the migration episode.

These results are reasonable and coherent with the school level attended. Table 4.4 reports the results for compulsory school attendance and Table 4.5 reports the results concerning secondary school. The control variables present the expected sign: children are more likely to drop out school when they are older, less likely to drop out the higher the level of education of their father's and mother's, suggesting the intergenerational transmission of education and the persistence of education inequality. When the head of the family is female, there is a positive impact in the long run on children's success at school, particularly in compulsory school, where budget constraints are less relevant. As suggested by other empirical work (Heckman and Masterov, 2007; Alderman et al., 2006), having attended preschool has a positive impact on cognitive development and reduces the risk of drop out or delay for adolescents. The distance of dwelling from public transport has a strongly negative impact on the access to education.

Male children are less vulnerable than females to the risk of drooping out during primary school. Variables indicating the level of education of parents and the household's social capital are always significant and with a large effect in determining school attendance of both primary and secondary school children. This finding confirm the hypothesis that traditional barriers imposed by the patriarchal society may affect female school participation in spite of the efforts made during the communist

Table 4.4: Primary School Progression (Ordered Logistic Regression - Partial Effects)

|  | No-attend 0 |  | Attend with delay 1 |  | Attend 2 |  |
|---|---|---|---|---|---|---|
| Sex | 0.017** | (0.008) | 0.022** | (0.009) | -0.039** | (0.017) |
| Age in months in 2005 | -0.002*** | (0.000) | -0.002*** | (0.000) | 0.004*** | (0.000) |
| HH is muslim | -0.012 | (0.009) | -0.014 | (0.012) | 0.026 | (0.020) |
| Months left behind while attending school | 0.008*** | (0.002) | 0.010*** | (0.003) | -0.017*** | (0.005) |
| Time (months) from the last parent's return | -0.000** | (0.000) | -0.001** | (0.000) | 0.001*** | (0.000) |
| Mother's education (level) | -0.008** | (0.004) | -0.011** | (0.004) | 0.019** | (0.008) |
| Father's education (level) | -0.007** | (0.003) | -0.008** | (0.004) | 0.015** | (0.007) |
| Children under 18 in the household | -0.009* | (0.005) | -0.011* | (0.006) | 0.020* | (0.011) |
| Number of hh members | 0.008** | (0.004) | 0.010** | (0.004) | -0.019** | (0.008) |
| Female hh head | -0.042*** | (0.012) | -0.062*** | (0.021) | 0.104*** | (0.032) |
| Years of preschooling | -0.029*** | (0.004) | -0.036*** | (0.004) | 0.065*** | (0.007) |
| HH social capital (n of groups belongs to) | -0.017*** | (0.007) | -0.021*** | (0.008) | 0.037*** | (0.014) |
| Mother has a job | -0.003 | (0.010) | -0.003 | (0.013) | 0.006 | (0.023) |
| Mother is self-employed | -0.018* | (0.009) | -0.023* | (0.013) | 0.041* | (0.022) |
| Father is employed | -0.018* | (0.009) | -0.023* | (0.013) | 0.041* | (0.022) |
| Father is self-employed | -0.015 | (0.011) | -0.019 | (0.015) | 0.033 | (0.026) |
| Log of pro-capita consumption (no education and child wear) in 2005 | 0.011 | (0.008) | 0.013 | (0.010) | -0.024 | (0.019) |
| Log of monthly remittances (lek) | -0.001 | (0.001) | -0.001 | (0.001) | 0.002 | (0.003) |
| Log of NE transfer | -0.001 | (0.001) | -0.002 | (0.002) | 0.003 | (0.003) |
| HH has ownership of dwelling | -0.001 | (0.013) | -0.001 | (0.016) | 0.002 | (0.028) |
| Distance from the nearest school | -0.000 | (0.000) | -0.000 | (0.000) | 0.001 | (0.001) |
| Distance from the nearest bus stop | 0.000 | (0.000) | 0.000 | (0.000) | -0.001 | (0.000) |
| Primary school exists in the community | -0.014 | (0.011) | -0.017 | (0.014) | 0.032 | (0.024) |
| Tirana | 0.016 | (0.016) | 0.019 | (0.018) | -0.034 | (0.034) |
| Cost urban | -0.004 | (0.015) | -0.006 | (0.019) | 0.010 | (0.034) |
| Cost rural | -0.018 | (0.012) | -0.025 | (0.017) | 0.043 | (0.029) |
| Central urban | 0.049** | (0.021) | 0.051*** | (0.017) | -0.101*** | (0.038) |
| Central rural | 0.018 | (0.015) | 0.021 | (0.016) | -0.039 | (0.031) |
| Mountain urban | 0.036** | (0.017) | 0.040** | (0.016) | -0.076** | (0.033) |
| Observations | 2575 |  | 2575 |  | 2575 |  |
| $R^2$ | 0.0852 |  | 0.0852 |  |  |  |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

era to favour female education. This can be explained in terms of the economic model presented in Section 1.1.3, as the investment on female human capital is lost when a daughter leaves her natal household at marriage, becoming part of the husband's family.

The economic status of the family (dwelling ownership) influences the frequency of drop-outs as well as employment status of parents[21], while logistical constraints may be a major reason for delays in primary school attendance. The presence of the school in a particular community is the major element influencing attendance in Tables 4.4 and 4.5, while family allowances, *ceteris paribus*, have no influence.

### 4.4.3 Child expenditure deprivation by age cohort

As far as child deprivation is concerned, no statistically significant influence of parental absence on the decision to allocate resources in favour of children was found (Table 4.6). Child poverty in terms of expenditure on goods for children and education is mainly influenced by the child's number of brothers/sisters and by economic status variables (the welfare and employment status of the father). The household's social capital is an important explanatory variable on the probability of not being deprived fro primary school children while father's education has a positive influence on the amount of resources devoted to the adolescent son or daughter.

### 4.4.4 Duration analysis of school attendance

A Kaplan-Meir estimation of the survival function (Figure 4.1), computed for the two samples of children who have never been left behind and those who have been, shows that the probability of survival (remaining in the school system) decreases substantially with the duration of the spell for those children who have been left, especially for secondary school. The estimation of the Cox proportional hazard model (Column (1) of Table 4.7) confirms this result. Being left behind affects the probability of the child's leaving school before s/he reaches 18 years old of age. The other coefficients have almost the same significance levels and signs of the previous model. Column (3) of Table 4.7 shows the estimates of the parametric frailty model where

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[21]Danaj et al. (2005) reports an average enrollment rates in secondary school of 40% with very high drop outs rate. Main reasons are limited availability of schools on rural regions and the need of young people work on family farm.

Table 4.5: Secondary School Progression (Ordered Logistic Regression - Partial Effects)

| | No-attend | | Attend with delay | | Attend | |
| --- | --- | --- | --- | --- | --- | --- |
| | 0 | | 1 | | 2 | |
| Sex | 0.002 | (0.016) | 0.000 | (0.002) | -0.002 | (0.018) |
| Age in months in 2005 | 0.006*** | (0.000) | 0.001*** | (0.000) | -0.007*** | (0.000) |
| HH is muslim | 0.027 | (0.021) | 0.003 | (0.002) | -0.030 | (0.023) |
| Months left behind while attending school | 0.151*** | (0.023) | 0.015*** | (0.003) | -0.166*** | (0.025) |
| Time (months) from the last parent's return | -0.001*** | (0.000) | -0.000*** | (0.000) | 0.001*** | (0.000) |
| Mother's education (level) | -0.067*** | (0.008) | -0.007*** | (0.001) | 0.074*** | (0.009) |
| Father's education (level) | -0.025*** | (0.007) | -0.003*** | (0.001) | 0.028*** | (0.008) |
| Children under 18 in the household | 0.023** | (0.009) | 0.002** | (0.001) | -0.026** | (0.010) |
| Number of hh members | 0.005 | (0.008) | 0.000 | (0.001) | -0.005 | (0.008) |
| Female hh head | -0.050 | (0.034) | -0.007 | (0.006) | 0.057 | (0.040) |
| Years of preschooling | -0.021*** | (0.007) | -0.002*** | (0.001) | 0.023*** | (0.008) |
| HH social capital (n of groups belongs to) | -0.038*** | (0.013) | -0.004*** | (0.001) | 0.042*** | (0.014) |
| Mother has a job | -0.015 | (0.023) | -0.002 | (0.003) | 0.017 | (0.025) |
| Mother is self-employed | -0.019 | (0.022) | -0.002 | (0.003) | 0.021 | (0.025) |
| Father is employed | -0.060*** | (0.020) | -0.006*** | (0.003) | 0.066*** | (0.023) |
| Father is self-employed | -0.060*** | (0.023) | -0.007* | (0.004) | 0.067*** | (0.026) |
| Log of pro-capita consumption (no education and child wear) in 2005 | -0.002 | (0.017) | -0.000 | (0.002) | 0.002 | (0.018) |
| Log of monthly remittances (lek) | -0.002 | (0.002) | -0.000 | (0.000) | 0.002 | (0.002) |
| Log of NE transfer | 0.002 | (0.003) | 0.000 | (0.000) | -0.002 | (0.003) |
| HH has ownership of dwelling | -0.067** | (0.029) | -0.004 | (0.003) | 0.071** | (0.033) |
| Distance from the nearest school | 0.001 | (0.001) | 0.000 | (0.000) | -0.001 | (0.001) |
| Distance from the nearest bus stop | 0.001*** | (0.000) | 0.000*** | (0.000) | -0.002*** | (0.001) |
| Secondary school exists in the community | -0.066*** | (0.021) | -0.007*** | (0.004) | 0.073*** | (0.025) |
| Tirana | 0.019 | (0.034) | 0.002 | (0.003) | -0.021 | (0.037) |
| Cost urban | -0.045 | (0.032) | -0.006 | (0.005) | 0.051 | (0.037) |
| Cost rural | 0.026 | (0.027) | 0.002 | (0.002) | -0.028 | (0.030) |
| Central urban | -0.037 | (0.032) | -0.005 | (0.005) | 0.042 | (0.037) |
| Central rural | 0.000 | (0.027) | 0.000 | (0.003) | -0.000 | (0.030) |
| Mountain urban | -0.048 | (0.032) | -0.006 | (0.005) | 0.054 | (0.037) |
| Observations | 1898 | | 1898 | | 1898 | |
| $R^2$ | 0.213 | | 0.213 | | | |

*** p<0.01, ** p<0.05, * p<0.1

Table 4.6: Probability of Child Consumption Deprivation (Marginal Effects)

| | Young children poor_3_5 | | Children poor_6_13 | | Adolescent poor_ad | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Sex | 0.0163 | 0.036 | 0.014 | (0.019) | -0.037 | (0.026) |
| Age in months in 2005 | -0.002 | (0.002) | -0.000 | (0.000) | -0.000 | (0.001) |
| HH is muslim | 0.032 | (0.038) | 0.018 | (0.024) | 0.003 | (0.031) |
| Months left behind | 0.001 | (0.006) | -0.006 | (0.006) | 0.001 | (0.004) |
| Time (months) from the last parent's return | -0.000 | (0.003) | -0.000 | (0.000) | 0.000 | (0.000) |
| Mother's education (level) | -0.010 | (0.017) | 0.011 | (0.009) | 0.009 | (0.013) |
| Father's education (level) | 0.003 | (0.014) | -0.007 | (0.008) | -0.021* | (0.011) |
| Children under 18 in the household | 0.053*** | (0.021) | 0.091*** | (0.013) | 0.058*** | (0.015) |
| Number of hh members | -0.040*** | (0.014) | -0.075*** | (0.010) | -0.056*** | (0.013) |
| Female hh head | -0.154** | (0.071) | -0.063 | (0.039) | -0.168*** | (0.047) |
| Years of preschooling | | | 0.003 | (0.008) | 0.030*** | (0.011) |
| HH social capital (n of groups belongs to) | -0.032 | (0.029) | -0.042*** | (0.015) | -0.026 | (0.018) |
| Mother has a job | 0.026 | (0.054) | 0.008 | (0.026) | -0.025 | (0.035) |
| Mother is self-employed | 0.044 | (0.050) | -0.001 | (0.026) | -0.054 | (0.035) |
| Father is employed | -0.032 | (0.048) | 0.012 | (0.026) | -0.015 | (0.034) |
| Father is self-employed | 0.058 | (0.058) | -0.024 | (0.030) | 0.024 | (0.040) |
| Log of pro-capita consumption (no education and child wear) in 2005 | -0.253*** | (0.041) | -0.258*** | (0.022) | -0.246*** | (0.027) |
| Log of monthly remittances (lek) | -0.002 | (0.006) | -0.005* | (0.003) | -0.001 | (0.003) |
| Log of NE transfer | 0.003 | (0.006) | -0.003 | (0.003) | -0.003 | (0.005) |
| HH has ownership of dwelling | -0.090 | (0.058) | -0.039 | (0.033) | 0.047 | (0.047) |
| Tirana | -0.081 | (0.070) | -0.068* | (0.036) | -0.061 | (0.047) |
| Cost urban | 0.191** | (0.075) | 0.127*** | (0.040) | 0.042 | (0.052) |
| Cost rural | 0.065 | (0.065) | 0.082** | (0.036) | 0.082* | (0.046) |
| Central urban | 0.047 | (0.073) | 0.162*** | (0.043) | 0.133** | (0.055) |
| Central rural | 0.056 | (0.058) | 0.072** | (0.035) | 0.048 | (0.045) |
| Mountain urban | 0.101 | (0.071) | -0.045 | (0.035) | -0.176*** | (0.040) |
| Observations | 783 | | 2575 | | 1519 | |
| $R^2$ | 0.090 | | 0.085 | | 0.095 | |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.7: Continuous Time Survival Analysis for School Attendance

| | Cox Model | | Parametric Model with Frailty | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | coef | se | coef | se |
| Sex | -0.243*** | (0.086) | -0.369** | (0.186) |
| HH is muslim | 0.582*** | (0.132) | 1.407*** | (0.274) |
| Months left behind while attending school | 0.053*** | (0.005) | 0.224*** | (0.054) |
| Mother's education (level) | -0.463*** | (0.069) | -0.795*** | (0.110) |
| Father's education (level) | -0.139*** | (0.043) | -0.362*** | (0.082) |
| Years of preschooling | -0.113*** | (0.041) | -0.238*** | (0.086) |
| Number of hh members | 0.023 | (0.029) | 0.118* | (0.065) |
| Mother has a job | -0.089 | (0.149) | -0.203 | (0.278) |
| Mother is self-employed | -0.033 | (0.107) | -0.216 | (0.243) |
| Father is employed | -0.212* | (0.117) | -0.461* | (0.252) |
| Father is self-employed | 0.095 | (0.120) | 0.165 | (0.283) |
| Female hh head | 0.097 | (0.178) | 0.393 | (0.405) |
| HH has ownership of dwelling | -0.151 | (0.162) | -0.393 | (0.354) |
| Log of consumption (no education and child wear) | -0.002 | (0.091) | -0.130 | (0.190) |
| Log of monthly remittances (lek) | 0.011 | (0.011) | -0.004 | (0.024) |
| Log of NE transfer | 0.002 | (0.014) | 0.024 | (0.031) |
| Primary school exists in the community | -0.171 | (0.110) | -0.790*** | (0.276) |
| Secondary school exists in the community | -0.263** | (0.128) | -0.185 | (0.291) |
| Distance from the nearest school | 0.000 | (0.003) | 0.008 | (0.008) |
| Distance from the nearest bus stop | 0.004* | (0.002) | 0.011* | (0.006) |
| Distance from the nearest doctor | -0.002 | (0.002) | -0.007 | (0.007) |
| Tirana | 0.137 | (0.201) | 0.270 | (0.401) |
| Cost urban | -0.011 | (0.198) | 0.262 | (0.394) |
| Cost rural | 0.146 | (0.131) | 0.534* | (0.310) |
| Central urban | -0.171 | (0.227) | -0.060 | (0.446) |
| Central rural | 0.204 | (0.134) | 0.803** | (0.317) |
| Mountain urban | -0.541** | (0.244) | -0.931** | (0.444) |
| Constant | | | -11.481*** | (1.905) |
| Observations | 4129 | | 4129 | |

*** p<0.01, ** p<0.05, * p<0.1

Table 4.8: Discrete Time Survival Analysis - Time-Varying Variables

| | Cox Model | |
| --- | --- | --- |
| | (1) | (2) |
| | coef | se |
| | | |
| Sex | -0.202** | (0.090) |
| HH is muslim | 0.521*** | (0.141) |
| Left behind with lag | 0.730** | (0.360) |
| Mother's education (level) | -0.457*** | (0.072) |
| Father's education (level) | -0.208*** | (0.045) |
| Children under 18 in the household | -0.020 | (0.043) |
| Number of hh members | 0.098*** | (0.034) |
| Female hh head | 0.239 | (0.387) |
| Distance from the nearest school | 0.005 | (0.003) |
| Distance from the nearest doctor | -0.002 | (0.003) |
| Distance from the nearest bus stop | 0.007*** | (0.002) |
| Secondary school exists in the community | -0.310** | (0.133) |
| Primary school exists in the community | -0.040 | (0.114) |
| tirana | 0.099 | (0.204) |
| cost urban | 0.153 | (0.194) |
| cost rural | 0.302** | (0.131) |
| central urban | -0.263 | (0.234) |
| central rural | 0.085 | (0.133) |
| mountain urban | -0.687*** | (0.263) |
| Shock=death of earner | 0.336 | (0.456) |
| Shock=job loss | 0.375 | (0.453) |
| Shock=househols destroyed | 0.754 | (0.585) |
| Shock=pyramide crisis | 0.283 | (1.017) |
| | | |
| Observations | 27811 | |
| $R^2$ | 0.0505 | |

*** p<0.01, ** p<0.05, * p<0.1

Figure 4.1: The Kaplan-Meier Estimation of Survival in School System
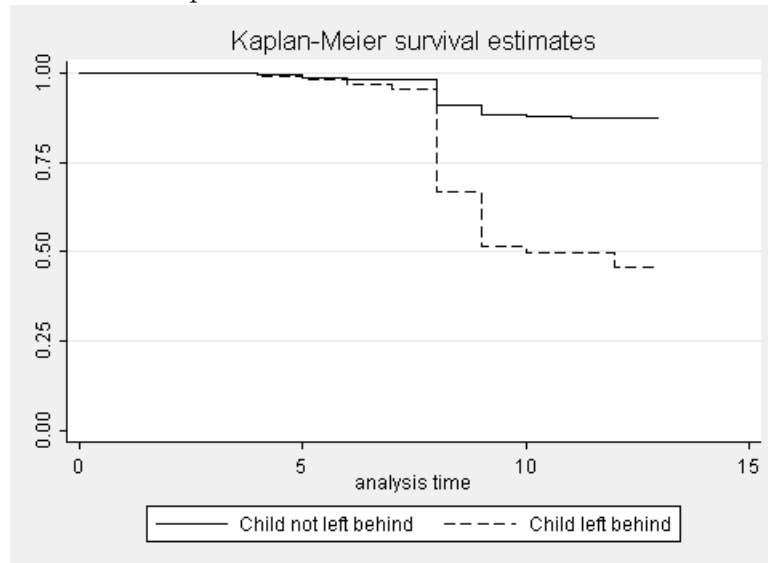


the hazard function takes a Weibull distribution. This estimator allows to control for unobserved heterogeneity and the likehood-ratio test confirms that heterogeneity cannot be neglected. The frailty model shows no relevant differences with respect to the Cox model. Both estimate a greater probability of school drop out due to having been left behind and to belonging to a Muslim household. A lower probability is associated with male gender, education of both parents and years of preschooling.

The negative effects of parental migration are also confirmed using the discrete time Cox model. This model allows to account for the dynamic effects of a time varying variable, namely, "left behind with lag[22]". Table 4.8 shows the discrete time model with time-varying covariates. Among the time-invariant covariates, as in all the other estimations, males are less at risk of dropping out than females. Belonging to a Muslim family or to a big family is related to a higher probability of leaving school. The episodes of being left behind are still negatively related to school drop outs controlling for the discrete nature of the collected data. The other time-varying variables (the micro and macroeconomic shocks) have no significant influence on dropping out, even though all of them present a positive sign.

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[22]Here the variable "left behind" is constructed in such a way that the effects are continued also in the year following the left behind episode. This ensures the simultaneity of the episodes "drop out" and "left behind" when they happen sequentially over time, that otherwise would be lost.

The fact that all estimated models lead to similar results, gives more support to those findings.

## 4.5   Concluding remarks

Several studies on children's welfare and migration have emphasized the positive effects of migration on children's outcomes deriving from the increase of economic resources to be invested in the accumulation of human capital. However, the positive income effects stemming from migrants' earnings are not without costs especially in the long run, if children remain without parents for a long time during their development.

The absence of parents may entail psychological costs and change the decision-making process within the household, implying a modification of intra-household duties and responsibilities, and possibly inducing children of migrants to spend less time in school related activities. Children may end up dropping out of school or being held back one or more grades due to non-completion or unsatisfactory completion of their educational formation.

Most of the existing studies assessing the impact of parental migration episodes on children's welfare neglect the aspect of children's residence while one or both parents are working abroad, mainly because lack of data. The survey data on migration used in this study allow to reconstruct retrospectively the children's schooling status during parental migration and effectively identify the long-run effects of the phenomenon.

Binary and multiple choice models have been applied to evaluate the decision to send young children to preschool and school progression of older children and adolescents. Finally, a duration analysis of school attendance with both discrete and continuous time models has been performed. All models have made use of retrospective information about children's school attendance and age at which they have been left behind to estimate the hazard function for the risk of dropping out of school.

The main finding of the analysis is that father's migration abroad negatively influences children's schooling in the long run, increasing the probability of dropping out and of delaying school progression. For females, the impact is even higher compared to males. The negative impact of the phenomenon tends to become smaller

the further in time from the actual events the migration episode is, while the effect increases with the length of the migration episodes.

The variables indicating the level of education of parents and household's social capital are relevant at all school levels in increasing the probability of school attendance. The economic status of the family and logistical constraints, like for example distance from school or from public transports influence the frequency of drop outs and delays among adolescents. The presence of the school in the community is the major element influencing attendance to non-compulsory schools (preschool and secondary school), a fact that could point to the inadequacy of the supply of schools in Albania. Being "left behind" still has significant positive effects on the probability of dropping school in a duration analysis that controls for the discrete time nature of the collected data.

These findings claim for a greater attention to be paid to children of migrant workers by Albanian public authorities. They should take into account the fact that, even if migration is an important source of economic growth for the country, there can be costs associated with the loss of human capital in the long run. The possible loss of human capital due to parents absence can have serious consequences in terms of future living standards. Hence, child school attendance should be properly sustained in those households where one or both parents have migrated abroad with the proper instruments to compensate for the absence of parental guidance.

# Summary and Conclusions

This thesis has studied the welfare of children in Albania from three points of view: 1) measures against poverty supplied by the government in terms of monetary benefits; 2) child's individual welfare considering inequality within the family due to an uneven intra-household distribution of resources; 3) the possible effects of parental migration - the most effective strategy in dealing with poverty in the country - on the long-term development of children as regards school progression.

A short introduction to the theoretical background behind the applied models and a summary of the main features of Albanian economy are presented before the three main essays (Chapter I). This chapter has proposed a theoretical foundation for the use of consumption expenditure as a monetary welfare measure, accounting for the possibility of having a more precise indicator of individual welfare through the application of collective consumption models. However, child wellbeing should not be considered only as monetary, hence, schooling decisions have been modelled as a long run indicator for child welfare. This analysis is followed by an exposition of the main socio-economic characteristics of the country under investigation, Albania.

The first essay (Chapter II) has evaluated the effectiveness of the only pro-poor programme in Albania. *Ndihma Ekonomike* is one of the earliest poverty reduction programmes implemented in transitional economies and had a positive record in terms of targeting during the 1990s, mainly due to its decentralised nature. An analysis of 2002 and 2005 Albanian LSMS has shown that the targeting performance of the programme has been weak and to have worsened as compared to the 1990s. Weak targeting may be explained by various factors including central budget allocation mechanisms, the design of the targeting methodology, the behaviour of clients and administrators, and the business cycle. Making use of a regression-adjusted matching estimator first proposed by Heckman et al. (1998b, 1997), the *Ndihma*

*Ekonomike* average treatment effects have been estimated. The results indicate a negative and significant effect on household welfare both in 2002 and 2005. Changes in programme design and the reduction of local administrator's duties and responsibilities between 2002 and 2005 increased the magnitude of the impact. A comparison of the cumulative distribution functions of the outcome variables for the treated and control groups have shown that the control groups invariably dominate the treated group all along the curves. This may have several possible interpretations. For instance, the reduction of welfare for the families involved in the programme could be attributable to labour-supply distortions, mainly on female labour supply, usually more elastic than male's. Even the small amount provided by the programme could be enough to discourage female work. The negative effect can also be attributed to targeting failures and mismanagement, although focusing exclusively on those targeted households which are effectively poor according to the surveys, the impact of the programme has remained close to zero (2002) or negative (2005). In this first analysis, the welfare of the family, and in particular the variation induced by an anti-poverty policy, has been evaluated by treating the family as a unit of analysis, implicitly assuming an equal distribution of the estimated effect among family members.

Chapter III, instead, explores the possibility of measuring the welfare of children and the impact of policies accounting for intra-household inequality. To perform this task, a collective consumption model has been proposed and a collective demand system has been estimated. Several demographical studies have pointed out the big changes occurring within Albanian households, deeply affected firstly by the transition to a regime that revolutionised the previous patriarchal tradition and secondly by the rapid transition to a market economy and complete openness after decades of isolation. One of the effects of the transition seems to have been that of bringing back those traditional values, with a marginal role for women and a general negligence toward childhood, especially in the northern regions and in rural areas. This complex situation made it particularly interesting to open the family black box in order to study individual welfare and evaluate the impact of public policies.

The analysis has been conducted on Albanian households with children under five, estimating a collective consumption model which results show that intra-household inequality measured on the share of child expenditure plays an important role in determining child welfare. Indeed, the Gini index for children increases when child

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welfare is computed using the "sharing rule" method versus the per-capita income method. Using non-parametric techniques, it is also possible to test whether receiving public transfers induces a modification of the "sharing rule" with respect to similar households that do not receive these transfers. A distinction has been made between cash transfers and in-kind transfers, the former being the NE benefit and the latter being represented by preschool attendance - which is paid for by the government. Following the results of these estimations, in-kind transfers are likely to improve the condition of children within the household for all income levels. However, means testing cash transfers do not seem to ameliorate the relative position of children, suggesting that the negative welfare results found in Chapter II for the household as a whole are also confirmed for children. The conclusions of Chapter III support the results of Bargain and Donni (2007): in-kind transfers, if properly conceived can be superior to cash transfer, both because well targeted and because they fulfil precise needs of vulnerable children.

The model presented in Chapter III has certain limitations, which could be improved with further investigation. The first is that rural Albanian households are likely to be engaged in household production (farm households). The collective consumption model could have been estimated separately for rural and urban households if a bigger sample size were available, including household production for rural households. Secondly, the model treats all adults equally, assuming equality between males and females. This simplifying assumption is surely significant when gender inequality is believed to be present, both in developing and developed countries. Thus, a clear step ahead would be the extension of the model to take into account a more realistic family composition. This would also require the inclusion of older children and adolescents in the model, but this strictly relies on the availability of survey's information on goods which can be considered exclusive to each age cohort, or to find a proper specification of the distribution factors in the "sharing rule" to control for age heterogeneity[23].

The last essay focuses on the impact of migration on child wellbeing. While the positive economic effects of migration on household income are well known, few studies deal with the qualitative effects of migration on the welfare of children. Hence, Chapter IV has evaluated the long-term effects of parental migration abroad on the

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[23]Note that this task is not always possible, since a distribution factor can not influence jointly consumption demand and the distribution of resources.

welfare of Albanian children left behind. The phenomenon of children left behind - mainly by fathers - is very relevant in Albania, where migration has represented the only viable way of coping with increasing poverty. The data on migration used in this study have enabled a retrospective reconstruction of the children's schooling status during parental migration and the effective identification of the long-run effects of the phenomenon. Binary and multiple choice models have been used to evaluate the decision to send young children to preschool, as well as the school progression of older children and adolescents. Finally, a duration analysis on school attendance has been performed with both discrete and continuous time models, making use of retrospective information about children's school attendance and the age at which they have been left behind to estimate the hazard of school drop-out.

The main finding of the analysis is that parent's migration abroad negatively influences children's schooling in the long run, increasing the probability of dropping out and of delaying school progression. For females, the impact is even higher than that for males. The negative impact of the phenomenon tends to become smaller as the distance in time between the migration episode and the actual events increases, while the effect increases with the length of the parental migration episodes. The variables indicating the level of education of parents and the household social capital are relevant at all school levels in increasing the probability of school attendance. The economic status of the family and logistical constraints, such as the distance from school or the distance from public transportation, significantly influence the frequency of drop outs and delays among adolescents. The presence of the school in the community is the major element influencing attendance at non-compulsory schools (preschool and secondary school), a fact that could point to the inadequacy of the supply of schools in Albania. Being "left behind" still has a significant positive impact on the probability of dropping out of school when the duration analysis has been performed controlling for the discrete-time nature of the collected data. One of the methodological choices of this study is the decision to distinguish children by age groups. If Chapter III has focused only on young children, Chapter IV has studied the welfare of children of three cohorts: children under-five, primary school age children and adolescents. The different results that have emerged demonstrate the importance of taking account of this heterogeneity, in terms of both economic theory and policy design.

Regarding the possible policy recommendations emerging from the findings of

the analysis on the effects of cash transfers, the first clear fact is that existing safety nets targeted to vulnerable households and children are not adequate. The natural conclusions to be drawn from the impact evaluation of *Ndihma Ekonomike* are that this cash transfer should be removed and that the expenditure budget share could be used following two possible strategies. The first is to devote resources to improving some typically progressive services such as public facilities for young children, basic education or health services. The second is to implement a new anti-poverty programme, in the form of a conditional cash transfer or a specific price subside, aiming at supporting vulnerable individuals within the household, taking into account intra-household inequality, which has been shown to be an issue during the Albanian transition from a communist regime to a market economy. In any case, it is recommended to improve adequacy of supply and quality of public services and to deal seriously with corruption, which is an huge obstacle to the equity and efficiency of the public sector in the country.

Another important evidence that has emerged is that migration may have some undesirable effects on the long run development of the country. Although migration has been identified as the main driver for the development of Albania during transition, it is also likely to have had a negative impact on the accumulation of human capital, the future wellbeing of children and the overall welfare of the country. This result clearly calls for greater attention to be paid toward children of migrant workers by Albanian public authorities. In fact, there can be costs associated with the loss of human capital in the long run if school attendance of children is not properly sustained in those households where one or both parents have migrated abroad.

This study aims to contribute to the existing literature in several ways, both from a theoretical, a methodological and an empirical point of view. First, Chapter III has proposed a method of dealing with child poverty by considering the intra-household allocation of resources. A collective consumption model has been developed to consider children within the household and to compare households with different demographic compositions. The identification of children's individual welfare through the "sharing rule" has made it possible to evaluate the effects of policy on individuals when no direct information on individual welfare is available, which can be very important for the policy maker when designing effective policies.

Second, from a methodological point of view, Chapter II has performed the first application of semi-parametric matching techniques extended with regression ad-

justment to an anti-poverty program in a developing setting. The analysis is characterised by a faithful modelling of the program screening process and governance, accounting also for the targeting local performance. Another methodological innovation, developed in Chapter III, has consisted in applying a collective consumption model for the empirical analysis of child welfare, allowing to identify the sharing rule using standard household budget data. This approach can be profitably employed in many countries where the classical collective model based on labour supply cannot be applied. Finally, Chapter IV has proposed an application of duration models to the study of the factors influencing school attendance and performance in the long term. A further element of innovation in this analysis is the full reconstruction of the historical dynamic relation between the two main variables of interest, school attendance/progression and parents migration, using cross sectional data.

Third, on the empirical side, Chapter II has contributed to the literature performing one of the first systematic evaluations of social programs in past-communist transition economies. Chapter III has applied for the first time the collective consumption framework to child poverty and inequality to a transition country. Chapter IV has assessed for the first time the impact of being "left behind" by emigrated parents taking advantage of retrospective data on schooling and migration.

# References

Akerlof, G.A. (1978) 'The economics of "tagging" as applied to the optimal income tax, welfare programs, and manpower planning.' *The American Economic Review* pp. 8–19

Alderman, H. (2001) 'Multi-tier targeting of social assistance: the role of intergovernmental transfers.' *The World Bank Economic Review* 15(1), 33

— (2002) 'Do local officials know something we do not? Decentralization of targeted transfers in Albania.' *Journal of Public Economics* 83(3), 375–404

Alderman, H., J. Hoddinott, and B. Kinsey (2006) 'Long term consequences of early childhood malnutrition.' *Oxford Economic Papers* 58(3), 450

Alderman, H., P.A. Chiappori, L. Haddad, J. Hoddinott, and R. Kanbur (1995) 'Unitary versus collective models of the household: is it time to shift the burden of proof?' *The World Bank Research Observer* 10(1), 1

Amemiya, T. (1978) 'On a Two-Step Estimation of a Multivariate Logit Model.' *Journal of Econometrics* 8, 13–21

— (1979) 'The Estimation of a Simultaneous Equation Tobit Model.' *International Economic Review* 20(1), 169–81

— (1985) *Advanced Econometrics* (Cambridge, Massachusetts: Harvard University Press)

Arrow, K.J. (1963) 'Uncertainty and the welfare economics of medical care.' *The American Economic Review* pp. 941–973

— (1973a) 'Social responsibility and economic efficiency.' *Public Policy* 21(3), 303–17

— (1973b) 'Some ordinalist-utilitarian notes on Rawls's theory of justice.' *Journal of Philosophy* 70(9), 245–263

Atkinson, A.B. (1987) 'Income Maintenance and Social Insurance.' In *Handbook of Public Economics, Vol. II,* ed. AJ Auerbach and M. Feldstein (North Holland)

Atkinson, A.B. (1995) 'On Targeting Social Security: Theory and Western Experience with Family Benefits.' In *Public spending and the poor,* ed. D. VandeWalle and K. Nead (Johns Hopkins Univ. Press)

Azzarri, C., G. Carletto, B. Carletto, and A. Zezza (2006) 'Choosing to migrate or migrating to choose: migration and labour choice in Albania.' *ESA Working Paper (FAO)*

Banks, J., R. Blundell, and A. Lewbel (1997) 'Quadratic Engel Curves and Consumer Demand.' *The Review of Economics and Statistics* 79(4), 527–39

Bargain, O., and O. Donni (2007) 'A Theory of Child Targeting.' IZA Discussion Papers 2669, Institute for the Study of Labor (IZA), March

Barrientos, A., and J. DeJong (2006) 'Reducing Child Poverty with Cash Transfers: A Sure Thing?' *Development Policy Review* 24(5), 537–552

Barten, A. P. (1964) 'Family Composition, Prices and Expenditure Patterns.' In *Econometric Analysis for National Economic Planning: 16th Symposium of the Colston Society,* ed. P. Hart, G. Mills, and J. K. Whitaker (Butterworth)

Becker, G.S. (1971) *The economics of discrimination* (University of Chicago Press)

— (1974) 'A theory of social interactions.' *Journal of Political Economy* 82(6), 1063

— (1981) *A Treaty on the Family* (Cambridge, MA: Harvard University Press)

Behrman, J.R. (1988) 'Intrahousehold allocation of nutrients in rural India: Are boys favored? Do parents exhibit inequality aversion?' *Oxford Economic Papers* 40(1), 32–54

— (1992) 'Intrahousehold allocation of nutrients and gender effects: a survey of structural and reduced-form estimates.' *Nutrition and Poverty* pp. 287–320

— (1994) 'Intra-family distribution in developing countries.' *The Pakistan Development Review* 33(3), 253–296

Behrman, J.R., Y. Cheng, and P.E. Todd (2004) 'Evaluating preschool programs when length of exposure to the program varies: A nonparametric approach.' *Review of Economics and Statistics* 86(1), 108–132

Beninger, D. (2008) 'A discrete choice estimation of a collective model of household labour supply: an application for Germany.' ZEW, Centre for European Economic Research

Bezemer, D.J. (2001) 'Post-socialist financial fragility: the case of Albania.' *Cambridge Journal of Economics* 25(1), 1

Bingley, P., and I. Walker (2007) 'There's no such thing as a Free Lunch: Altruistic parents and the response of household food expenditures to nutrition program reforms.' Working Paper Series 200719, Geary Institute, University College Dublin

Blackorby, C., and D. Donaldson (1988) 'Cash versus kind, self-selection, and efficient transfers.' *The American Economic Review* pp. 691–700

Bliss, CI (1935) 'The calculation of the dosage-mortality curve.' *Ann. Appl. Biol* 22, 134–167

Bollino, C. A., F. Perali, and N. Rossi (2000) 'Linear Household Technologies.' *Journal of Applied Econometrics* 15(3), 275–87

Bourguignon, F. (1999) 'The Cost of Children: May the Collective Approach to Household Behavior Help?' *Journal of Population Economics* 12, 503–21

Bourguignon, F., and A. Spadaro (2006) 'Microsimulation as a tool for evaluating redistribution policies.' *Journal of Economic Inequality* 4(1), 77–106

Bourguignon, F., M. Browning, and P. A. Chiappori (2009) 'Efficient Intra-Household Allocations and Distribution Factors: Implications and Identification.' *Review of Economic Studies* 76(2), 503–528

Breiman, L., J.H. Friedman, R.A. Olshen, and C.J. Stone (1984) *Classification and regression trees* (Wadsworth, Belmont)

Browning, M. (1992) 'Children and household economic behavior.' *Journal of Economic Literature* 30(3), 1434–1475

Browning, M., F. Bourguignon, P.A. Chiappori, and V. Lechene (1994) 'Income and outcomes: a structural model of intrahousehold allocation.' *Journal of Political Economy* pp. 1067–1096

Browning, M., P. Chiappori, and A. Lewbel (2006) 'Estimating Consumption Economies of Scale, Adult Equivalence Scales, and Household Bargaining Power.' Boston College Working Paper WP588, Department of Economics, Boston College

Calero, C., A.S. Bedi, and R. Sparrow (2009) 'Remittances, liquidity constraints and human capital investments in Ecuador.' *World Development* 37(6), 1143–1154

Caliendo, M., and S. Kopeinig (2008) 'Some practical guidance for the implementation of propensity score matching.' *Journal of Economic Surveys* 22(1), 31–72

Case, A. (2001) 'Election goals and income redistribution: recent evidence from Albania.' *European Economic Review* 45(3), 405–423

Chase, R.S. (2002) 'Supporting Communities in Transition: The Impact of the Armenian Social Investment Fund.' *The World Bank Economic Review* 16(2), 219

Cherchye, L., B. de Rock, and F. Vermeulen (2008) 'Economic Well-Being and Poverty Among the Elderly: An Analysis Based on a Collective Consumption Model.' Discussion Paper 2008-15, Tilburg University, Center for Economic Research

Chiappori, P. A. (1988) 'Rational Household Labor Supply.' *Econometrica* 56(1), 63–90

_ (1992) 'Collective Labor Supply and Welfare.' *Journal of Political Economy* 100(3), 437–67

Chiappori, P. A., and I. Ekeland (2006) 'The Microeconomics of Group Behavior: General Characterization.' *Journal of Economic Theory* 127(1), 1–26

_ (2009) 'The Microeconomics of Efficient Group Behavior: Identification.' *Econometrica* 77(3), 763–799

134

Chiswick, B.R., and N. DebBurman (2006) 'Pre-school enrollment: an analysis by immigrant generation.' *Social Science Research* 35(1), 60–87

Conning, J., and M. Kevane (2002) 'Community-based targeting mechanisms for social safety nets: a critical review.' *World Development* 30(3), 375–394

Cornia, G. A. (1995) 'Ugly Facts and Fancy Theories: Children and Youth during the Transition.' Innocenti Occasional Papers, Economic Policy Series 95/19, UNICEF Innocenti Research Centre

Cornia, G. A., and F. Steward (1995) 'Two Errors of Targeting.' In *Public spending and the poor,* ed. D. VandeWalle and K. Nead (Johns Hopkins Univ. Press)

Cortes, R. (2006) 'Remittances and Children's Rights: An overview of academic and policy literature.' Technical Report, UNICEF

Cox, DR (1972) 'Regression models and life-tables.' *Journal of the Royal Statistical Society. Series B (Methodological)* pp. 187–220

Dabalen, A., T. Kilic, and W. Wane (2008) 'Social Transfers, Labor Supply And Poverty Reduction.' World Bank Research Working Papers 4783, World Bank

Danaj, E., P. Festy, A. Guxho, M. Lika, and E. Zhllima (2005) 'Becoming an adult: challenges and potentials of youth in Albania.' Technical Report, INSTAT

Deaton, A., and J. Muellbauer (1980a) *Economics and consumer behavior* (Cambridge Univ Pr)

Deaton, A. S., and J. Muellbauer (1980b) 'An Almost Ideal Demand System.' *American Economic Review* 70, 321–26

Del Boca, D. (2003) 'Mothers, fathers and children after divorce: The role of institutions.' *Journal of Population Economics* 16(3), 399–422

Diewert, W.E. (1974) 'Applications of duality theory.' *Frontiers of quantitative economics* 2, 106–171

Doyle, O., C. P. Harmon, J. J. Heckman, and R. E. Tremblay (2009) 'Investing in early human development: Timing and economic efficiency.' *Economics and Human Biology* 7(1), 1–6

Duflo, E. (2000) 'Child health and household resources in South Africa: Evidence from the Old Age Pension program.' *American Economic Review* pp. 393–398

Ebert, U., and P. Moyes (2003) 'Equivalence Scales Revisited.' *Econometrica* 71, 319–344

_ (2009) 'Household decisions and equivalence scales.' *Journal of Population Economics* 22(4), 1039–1062

Edwards, A.C., and M. Ureta (2003) 'International migration, remittances, and schooling: evidence from El Salvador.' *Journal of Development Economics* 72(2), 429–461

Ermisch, J. (2008) 'Child support and non-resident fathers contact with their children.' *Journal of Population Economics* 21(4), 827–853

Falkingham, J., and A. Gjonca (2001) 'Fertility transition in communist Albania 1950-1990.' *Population Studies* 55(3), 309–318

Foster, J.E., and A.F. Shorrocks (1988) 'Poverty orderings.' *Econometrica: Journal of the Econometric Society* pp. 173–177

Galasso, E., and M. Ravallion (2005) 'Decentralized targeting of an antipoverty program.' *Journal of Public Economics* 89(4), 705–727

Ginther, D.K., and R.A. Pollak (2004) 'Family structure and children's educational outcomes: Blended families, stylized facts, and descriptive regressions.' *Demography* 41(4), 671–696

Gjonca, A., A. Aassve, and L. Mencarini (2008) 'Trends and patterns, proximate determinants and policies of fertility change: Albania.' *Demographic research* 19(11), 261–292

Gorman, W. M. (1976) 'Tricks with Utility Functions.' In *Proceedings of the 1975 AUTE Conference, Essays in Economic Analysis,* ed. M. J. Artis and A. R. Nobay (Cambridge: Cambridge University Press)

Gray, Di Cheryl, Tracey Lane, and Aristomne Varoudakis (2007) 'Fiscal Policy and Economic Growth: lessons for Eastern Europe and Central Asia.' Technical Report, World Bank

136

Haddad, L., and R. Kanbur (1990) 'How Serious Is the Neglect of Intra-Household Inequality?' *Economic Journal* 100(402), 866–81

＿ (1992) 'Intrahousehold inequality and the theory of targeting.' *European Economic Review* 36(2-3), 372–378

Harriss, B. (1990) *The Political Economy of Hunger, Entitlement and Well-Being* (Oxford Univ Press)

Harsanyi, J.C. (1955) 'Cardinal welfare, individualistic ethics, and interpersonal comparisons of utility.' *The Journal of Political Economy* 63(4), 309

Heckman, J. (1979) 'Sample Selection Bias as a Specification Error.' *Econometrica* 47(1), 153–61

Heckman, J., H. Ichimura, J. Smith, and P. Todd (1998a) 'Characterizing selection bias using experimental data.' *Econometrica* pp. 1017–1098

Heckman, James J., and Dimitriy V. Masterov (2007) 'The Productivity Argument for Investing in Young Children.' *Review of Agricultural Economics* 29(3), 446–493

Heckman, James J, Hidehiko Ichimura, and Petra E Todd (1997) 'Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme.' *Review of Economic Studies* 64(4), 605–54

Heckman, J.J., and R. Robb Jr (1985) 'Alternative methods for evaluating the impact of interventions: An overview.' *Journal of Econometrics* 30(1-2), 239–267

Heckman, J.J., H. Ichimura, and P. Todd (1998b) 'Matching as an econometric evaluation estimator.' *Review of Economic Studies* pp. 261–294

Hildebrandt, N., and DJ McKenzie (2005) 'The Effects of Migration on Child Health in Mexico.(p. 35).' *Washington, DC: The World Bank*

Hochman, H.M., and G.E. Peterson (1974) *Redistribution through public choice* (Columbia University Press New York)

Hochman, H.M., and J.D. Rodgers (1969) 'Pareto optimal redistribution.' *The American Economic Review* 59(4), 542–557

Hoff, K., and J.E. Stiglitz (1990) 'Introduction: Imperfect Information and Rural Credit Markets–Puzzles and Policy Perspectives.' *The World Bank Economic Review* 4(3), 235

Inchauste, G. (2001) 'Intrahousehold Allocation of Resources: The Bolivian Family.' Working Paper WP/01/57, IMF

Jarvis, C. (2000) 'The rise and fall of the pyramid schemes in Albania.' *IMF staff papers* 47(1), 1–29

Jenkins, S.P. (2004) 'Survival analysis.' Institute for Social and Economic Research, University of Essex.

Jeremy, L., and S. Shannon (2007) 'Consumption inequality and intra-household allocations.' IFS Working Papers W07/09, Institute for Fiscal Studies

Kanbur, R. (1991) 'Children and intra-household inequality: a theoretical analysis.' Policy Research Working Paper Series 685, World Bank

_ (2009) 'Poverty and Distribution: Twenty Years Ago and Now.' WP 2009-03, Department of Applied Economics and Managment, Cornell University.

Kanbur, R., M. Keen, and M. Tuomala (1994) 'Labor supply and targeting in poverty alleviation programs.' *The World Bank Economic Review* 8(2), 191

Kebede, B. (2004) 'Decomposition of Household Expenditure and Child Welfare in Rural Ethiopia.' Technical Report, EconWPA, Development and Comp Systems

King, M.A. (1983) 'Welfare analysis of tax reforms using household data.' *Journal of Public Economics* 21(2), 183–214

King, R., and J. Vullnetari (2003) 'Migration and development in Albania.' Technical Report, Development Research Centre on Migration, Globalisation and Poverty, Brighton

King, R., N. Mai, and S. Schwandner-Sievers (2005) *The new Albanian migration* (Sussex Academic Pr)

Kiros, G.E., and M.J. White (2004) 'Migration, community context, and child immunization in Ethiopia.' *Social Science & Medicine* 59(12), 2603–2616

Kolpeja, V. (2006) 'Program Implementation Matters for Targeting Performance: Evidence and Lessons from Eastern and Central Europe.' Technical Report, World Bank

LaLonde, R.J. (1986) 'Evaluating the econometric evaluations of training programs with experimental data.' *The American Economic Review* pp. 604–620

Lawson, C.W., J. Allister McGregor, and D.K. Saltmarshe (2000) 'Surviving and thriving: differentiation in a peri-urban community in Northern Albania.' *World Development* 28(8), 1499–1514

Lewbel, A. (1985) 'A Unified Approach to Incorporating Demograpic or Other Effects Into Demand Systems.' *Review of Economic Studies* 70(1), 1–18

_ (1989) 'Identification and Estimation of Equivalence Scales under Weak Separability.' *Review of Economic Studies* 56(2), 311–16

Liang, Z., and Y.P. Chen (2007) 'The educational consequences of migration for children in China.' *Social Science Research* 36(1), 28–47

Lokshin, M., and M. Ravallion (2000) 'Welfare impacts of the 1998 financial crisis in Russia and the response of the public safety net.' *Economics of Transition* 8(2), 269–295

Maddala, G. S. (1983) *Limited-Dependent and Qualitative Variables in Econometrics* (Cambridge University Press)

Mankiw, N.G., D. Romer, and D.N. Weil (1992) 'A contribution to the empirics of economic growth.' *The Quarterly Journal of Economics* 107(2), 407–437

Marnie, S., and J. Micklewright (2005) 'Targeting social assistance in a transition economy: The Mahallas in Uzbekistan.' *Social Policy and Administration* 39(4), 431–447

McCullagh, P. (1980) 'Regression models for ordinal data.' *Journal of the Royal Statistical Society. Series B (Methodological)* 42(2), 109–142

McKenzie, D., and H. Rapoport (2006) 'Can migration reduce educational attainment? Evidence from Mexico.' Policy Research Working Paper Series, World Bank

Mendola, M., and G. Carletto (2008) 'International migration and gender differentials in the home labor market: evidence from Albania.' Working Papers 148, University of Milano-Bicocca, Department of Economics

Menon, M., F. Perali, and L. Piccoli (2008) 'The passive drinking effect: evidence from Italy.' PSE Working Paper 2008-33, Paris School of Economics

Michalopoulos, C., H.S. Bloom, and C.J. Hill (2004) 'Can propensity-score methods match the findings from a random assignment evaluation of mandatory welfare-to-work programs?' *Review of Economics and Statistics* 86(1), 156–179

Micklewright, J. (1999) 'Education, inequality and transition.' *Economics of Transition* 7(2), 343–376

Milanovic, B. (2000) 'Social Transfers and Social Assistance: an empirical analysis using Latvian household survey data.' Policy Research Working Paper Series, World Bank

Mincer, J.A. (1974) *Schooling, Experience, and Earnings* (National Bureau of Economic Research, Inc)

Namoro, S., and R. Roushdy (2009) 'Intrahousehold Resource Allocation In Egypt: Women Empowerment And Investment In Children.' *Middle East Development Journal* 1(01), 105–121

Nichols, A.L., and R.J. Zeckhauser (1982) 'Targeting transfers through restrictions on recipients.' *The American Economic Review* pp. 372–377

Oates, W.E. (1972) *Fiscal federalism* (Harcourt)

Okrasa, W. (1999) 'The Dynamics of Poverty and the Effectiveness of Poland's Safety Net (1993-1996).' Policy Research Working Paper Series 2221, World Bank

Orazem, P.F., and E.M. King (2008) 'Schooling in developing countries: The roles of supply, demand and government policy.' In *Handbook of development economics Vol.4,* ed. T.P. Schultz and J. Strauss (North Holland) pp. 3475–3559

Peluso, E., and A. Trannoy (2007) 'Does less inequality among households mean less inequality among individuals?' *Journal of Economic Theory* 133(1), 568–578

Perali, F. (2003) *The Behavioral and Welfare Analysis of Consumption. The Cost of Children, Equity and Poverty in Colombia* (Springer-Verlag)

Phipps, S.A., and P.S. Burton (1996) 'Collective models of family behaviour: implications for economic policy.' *Canadian Public Policy/Analyse de Politiques* 22(2), 129–143

Pigou, A.C. (1920) 'The economics of welfare.' *Macmillan* 72, 480–697

Pollak, R., and T. J. Wales (1981) 'Demographic Variables in Demand Analysis.' *Econometrica* 49(6), 1533–51

Pollak, R.A., and T.J. Wales (1979) 'Welfare comparisons and equivalence scales.' *The American Economic Review* pp. 216–221

Pollard, E.L., and P.D. Lee (2003) 'Child well-being: a systematic review of the literature.' *Social Indicators Research* 61(1), 59–78

Pudney, S., F. Mealli, and F. Rosati (2006) 'Measuring the Economic Vulnerability of Children in Developing Countries: An Application to Guatemala.' Working Papers 2006-28, ISER

Ravallion, M., and B. Bidani (1994) 'How robust is a poverty profile?' *The World Bank Economic Review* 8(1), 75–102

Ravallion, M., D. van de Walle, and M. Gautam (1995) 'Testing a social safety net.' *Journal of Public Economics* 57(2), 175–199

Rosenbaum, P.R. (2002) *Observational studies* (Springer Verlag)

Rosenbaum, P.R., and D.B. Rubin (1983) 'The central role of the propensity score in observational studies for causal effects.' *Biometrika* 70(1), 41–55

_ (1985) 'Constructing a control group using multivariate matched sampling methods that incorporate the propensity score.' *American Statistician* pp. 33–38

Sahn, D.E., and A. Gerstle (2004) 'Child allowances and allocative decisions in Romanian households.' *Applied Economics* 36(14), 1513–1521

141

Samuelson, P.A. (1974) 'Complementarity: An essay on the 40th anniversary of the Hicks-Allen revolution in demand theory.' *Journal of Economic Literature* 12(4), 1255–1289

Sen, A. (1983) 'Economics and the Family.' *Asian Development Review* 1(2), 14–26

— (1992) *On ethics and economics* (Wiley-Blackwell)

Sen, A.K. (1988) 'Family and food: Sex bias in poverty.' *Rural poverty in South Asia* pp. 453–72

Shonkwiler, J. S., and S. T. Yen (1999) 'Two-Step Estimation of a Censored System of Equations.' *American Journal of Agricultural Economics* 82(4), 972–982

Stark, O., C. Helmenstein, and A. Prskawetz (1997) 'A brain gain with a brain drain.' *Economics Letters* 55(2), 227–234

Stark, Oded, and Yong Wang (2002) 'Inducing human capital formation: migration as a substitute for subsidies.' *Journal of Public Economics* 86(1), 29–46

Sydenstricker, E., and W.I. King (1921) 'The measurement of the relative economic status of families.' *Quarterly Publications of the American Statistical Association* pp. 842–857

Thomas, D. (1990) 'Intra-household resource allocation: An inferential approach.' *The Journal of Human Resources* 25(4), 635–664

Tobin, J. (1958) 'Estimation of relationships for limited dependent variables.' *Econometrica* 26(1), 24–36

Todd, P. (2008) 'Evaluating Social Programs with Endogenous Program Placement and Selection of the Treated.' In *Handbook of development economics Vol.4,* ed. T.P. Schultz and J. Strauss (North Holland)

Tzavidis, N., N. Salvati, M. Pratesi, and R. Chambers (2008) 'M-quantile models with application to poverty mapping.' *Statistical Methods and Applications* 17(3), 393–411

UNICEF (2000) 'Multiple Indicator Cluster Survey Report.' Technical Report, UNICEF Albania

— (2004) 'Situation Surrounding Early Childhood in the Main Sectors: Analysis and Targets for the Future.' Technical Report, UNICEF Albania

— (2009) 'Child Well-Being at a Crossroads: Evolving challenges in Central and Eastern Europe and the Commonwealth of Independent States.' Innocenti Social Monitor, UNICEF Innocenti Research Centre

Van de Walle, D. (2003) 'Are Returns to Investment Lower for the Poor? Human and Physical Capital Interactions in Rural Vietnam.' *Review of Development Economics* 7(4), 636–653

— (2004) 'Testing Vietnam's public safety net.' *Journal of Comparative Economics* 32(4), 661–679

Verme, P. (2008) 'Social Assistance and Poverty Reduction in Moldova, 2001–2004.' Policy Research Working Paper 4658, World Bank

Waldfogel, J. (2002) 'Child care, women's employment, and child outcomes.' *Journal of Population Economics* 15(3), 527–548

WB (2003) 'Albania Poverty Assesment.' Report 26213 - AL, World Bank

— (2006) 'Albania: restructuring public expenditure to sustain growth.' Report 36543 - AL, World Bank

— (2007) 'Albania: Urban Growth, Migration and Poverty Reduction.' Report 40071 - AL, World Bank

Yamano, T., Y. Shimamura, and D. Sserunkuuma (2006) 'Living arrangements and schooling of orphaned children and adolescents in Uganda.' *Economic Development and Cultural Change* 54(4), 833–856

Yen, S. T. (1993) 'Working Wives and Food Away from Home: The Box-Cox Double-Hurdle Model.' *American Journal of Agricultural Economics* 75, 884–95