ACCESS TO SECONDARY EDUCATION IN ALBANIA:

INCENTIVES, OBSTACLES, AND POLICY SPILLOVERS

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Abstract

When judged either by educational attainment of adult population or by secondary and tertiary enrollment rates, by 2002 Albania compared very unfavorably to most European countries, including its neighbors. This study examines the determinants of secondary enrollment applying unobserved family effect probit model to data from Living Standards Measurement Survey 2002-2003. The focus of the paper is to investigate the importance of access to school and to further education for enrollment. We find that both absence of a secondary school in the community and the distance from the residence location to a secondary school have strong negative effect on enrollment, controlling for family background. In order to alleviate potential endogeneity bias of distance and community characteristics effects, we control for migration history of individuals since 1990. In rural areas, enrollment is impeded also by absence of a pre-school in the community, and by higher transportation cost from the community to its "main" secondary school. Proximity to a university city (as opposed to other urban centers) substantially increases likelihood of secondary enrollment in rural areas. In urban areas, a similar effect has emerged in 2003, plausibly as a response to opening the market for private universities. The above findings suggest that developing tertiary education and child-care system may have positive spillover effects on secondary enrollment.

Keywords: school access, demand for schooling, opportunity costs, family background, Albania.

JEL classification codes: J24; J12; J13; O15.

1. Introduction

When judged either by educational attainment of adult population or by secondary and tertiary enrollment rates, by 2002 Albania compared very unfavorably to most European countries including its neighbors (see Figure 1, Tables 1 and 2). Moreover, between 1989 and 1995 secondary enrollment rates have dropped by 50 percent (such a trend was unique in the region, see Figure 2). This is a complete reversal of the trends observed before the transition: between 1970 and 1990 number of secondary school graduates increased tenfold, and number of university graduates – almost 2.5 times (Gjonça et al, 2004). Low secondary enrollment is considered to be one of the key constraints to Albania's economic growth in the long run (World Bank 2004).

Although there is a large body of theoretical and empirical research on educational attainment in many European countries, there is no comprehensive study (al least what the authors know of) that investigates reasons and obstacles that lead to so low demand for education in Albania. Some insights have been provided in World Bank (2003) which documents sizable differences in enrollment rates between non-poor and poor families, as well as between urban and rural households. For instance, it has been found that secondary enrollment rate among 14-17 year old teenagers from non-poor families is around 50 percent, whereas it is below 20 percent for their poor counterparts.

Albania differs from other transition countries in many respects which have implications for its labor market and educational system. Firstly, as mentioned above, Albania's population is significantly less educated. Secondly, Albania is on a lower stage of economic development: Albanian GDP per capita in 2002 was 3 to 4 times lower than that of, for example, the Baltic countries and Poland. Moreover, Albanian labor market is dominated by agriculture (see Figure 3). Demographic distribution of the population is quite different: Albanian aged 14 to19 has, on average, more than 3 siblings, while in the other Eastern and Central European countries this

would be a very rare situation. Finally, one can expect that different pre-transition background (Albania used to be the most closed country in the ex-socialist block and had not liberalized like other ex-socialist countries at the end of the socialist era) may affect incentives and prospects of investment in human capital. All of these reasons make Albania an interesting case for the analysis.

This study intends to investigate reasons for low enrollment rates in secondary education in Albania. With very good data (including households' geographical coordinates) at hand, we hope to provide some insights on relative importance of residential location and access to schools, as well as gender, parental education, family structure, agricultural land ownership and other relevant factors in shaping the demand for secondary education. From a policy point of view it is also important to understand what the main obstacles for enrollment in secondary education are in order to design more targeted policies.

The empirical analysis is based on probit models of a choice to enroll in secondary education, accounting for unobserved family effects. We use Albanian Living Standards Measurement Surveys 2002-2003 conducted by the World Bank. The results suggest that controlling for family background and household structure, poor access to schools (longer distance and higher commuting costs) appears to be a very important obstacle to enrollment. We also find that potential obstacles to enrollment on higher steps of schooling ladder, such as large distance from the universities, decrease substantially the likelihood of secondary enrollment. Proximity to universities as a predictor of secondary enrollment became more important in 2003, when the first two private universities started to operate, while public universities were allowed to increase intake of fee-based students, both full-time and part-time.

The rest of the paper is organized as follows. Section 2 provides a description of the relevant literature on determinants of educational attainment. Section 3 presents data used for the analysis and descriptive statistics. Section 4 describes methodology and choice of variables which,

according to the theoretical literature and previous empirical work, may affect enrollment decision. Estimation results are given in Sections 5. Section 6 concludes and suggests some policy implications.

2. Literature Review

Substantial number of previous research work was devoted to the choice of education and investment in human capital. Most of the conceptual issues underlying the empirical studies can be illustrated by the simple model of Becker (1964), in which one chooses optimal level of education balancing the benefits of higher education over the life-cycle and costs of schooling borne while in school. The relevant studies for this paper are those that focus on the costs side and not on the returns to schooling. If some young people who are willing to continue education are disadvantaged in accessing university, or even earlier in accessing secondary school, due to family background characteristics, then the potential role of education for the movement up the social ladder is impeded. Most of existing research in this area examines two aspects of family background characteristics: namely, family income and parental education. Another stream of the literature focuses on the access to schools as a measure of direct costs of schooling. The results of the latter studies may have important policy implications such as building new schools or subsidizing secondary education. This section reviews the relevant literature on determinants of educational attainment.

Positive correlation between parental and children's educational attainment is well documented in the previous studies (see Card (1995), for survey). Recent literature (see for instance Black et al (2005)) has addressed the question whether the link between parental and children's education is causal, and the results so far are inconclusive[1]. There are several channels

[1] For instance, Chevalier et al. (2005) use instrumental variable methods to simultaneously account for the endogeneity of parental education and paternal income, and find that the strong effects of parental education become insignificant. On the other hand, Bjorklund *et al.* (2004) find that after accounting for genetics the causal effects of parental education remains highly significant.

of intergenerational link. More educated parents are likely to be more able, and children might inherit their ability. Educated parents are more likely to provide a learning-friendly environment, to enroll children in better schools, and to encourage post-secondary schooling. It is, however, less well documented in transition context where one can expect some adverse effects of restructuring on intergenerational correlations (see Fan et al (1999); Spagat (2002a, 2002b)). Despite it, Beblo and Lauer (2004) for Poland, Hazans et al (2005) for the Baltic countries, and Varga (2006) for Hungary have found strong positive effect of parental education on children's educational attainment and/or schooling decisions.

The vast majority of the literature on determinants of schooling established a positive correlation between family income and schooling attainment (see Cameron and Heckman (2001) for instance). The most popular interpretation of this finding is educational financing constraints which teenagers face when making their schooling decision. Another possible explanation for positive correlation between parental income and educational attainment stresses long-term effects of family income. Several studies have found positive correlation between family income and other family background measures and achievement in the test performance in elementary and secondary school. This evidence is suggestive of parental income working in the same way as parental education as long as shaping children's cognitive ability and taste for education are concerned. Carneiro and Heckman (2002) point out that the importance of family income and other family factors has been confirmed in many different environments including those with free tuition and no restrictions on entry.

Several studies have found that geographical distance to school significantly decreases probability of attending university, controlling for family background (see for instance Frenette (2006)). This evidence is in line with the theoretical prediction that students who live closer to university have lower costs of schooling (by staying at home while attending the local school)

and therefore are more likely to continue education. Cameron and Taber (2004) measure direct cost of schooling by the presence of a college in the county of residence. They found a large effect of the ease to college access, implying that individuals with a college in their county complete half a year more of schooling on average.

Similar results were found for primary and secondary schools (see among others Foster and Rosenzweig (1996), Bommier and Lambert (2000), Duflo (2001)). On the other hand, Filmer (2004) uses data from 21 low-income countries (including some of the poorest countries in Sub-Saharan Africa) to show that there is a negative relationship between school participation of 6 to 14 year olds in rural areas and the distance to primary and secondary schools; however, the magnitudes of the associations are small. He finds that simulating big reductions in distance yields only small increases in school enrollment on average, and suggests focusing on policies aimed at increasing the demand for schooling or the quality of schooling.

Most of the above-mentioned empirical results, however, refer to primary schools or to post-secondary rather than secondary education. A further limitation of Filmer's results is that he uses community level distances; ignoring variation of distance to school among households (which in rural areas typically is substantial) leads to a downward bias in the estimated distance effects.

The purpose of this study is to explore how important for secondary enrollment is geographical distance to secondary schools, (measuring the direct costs of schooling), as well as distance to the universities (proxying for the future returns to schooling and access to information about continuing education).

3. Data and Descriptive Statistics

The study intends to analyze the determinants of secondary enrollment using data from Albanian Living Standards Measurement Survey (see World Bank and INSTAT 2003). The survey was conducted in 2002 and is now available at www.worldbank.org/lsms. Also, a sub-

sample panel survey conducted in 2003 has recently become available. It provides very rich information on household level and on individual level, combining features of a Household Budget Survey, Labor Force Survey, Living Conditions Survey, and Agricultural Census; a separate community questionnaire provides useful additional information on school access and quality. Albanian population is one of the youngest in Europe, so the 3599 households, which were surveyed, ensure sufficient number of young respondents.

The data contains information on geographical coordinates of residence locations of all households. The common approach in the literature on developed countries is to derive geographic coordinates of institutions from the postal codes (see for instance Frenette (2006)). This approach was not feasible for Albania due to data limitations; moreover, in rural Albania distances between schools and post offices are sometimes quite big. Therefore, we construct coordinates of schools by taking the mean longitude and latitude coordinates of those students who study in that particular school[2]. We construct coordinates of cities as being equal to its residents' median coordinates (in this case, medians perform better than means). Finally, the distances from household locations to schools and to big cities are calculated as straight-line distances[3].

We start with pooled 2002 and 2003 LSMS data, where the relevant sample includes 1908 individuals 14-19 years old. Most of them live with parents; less than 5 percent live either with spouse's or brother's family and hence lack information on parents. Hereafter we exclude these

[2] We also tried different ways of calculating coordinates of secondary schools and the mean-coordinate approach appeared to perform better (using medians instead of means leads to similar results, but slightly larger standard errors of estimated parameters of the models). For instance, we used nonlinear least squares to find the coordinates of the secondary schools, given the information on reported distance to schools (*d*) for students who are enrolled and their coordinates *(x,y)*. In particular, we choose schools' coordinates *(a,b)* to minimize the difference between squared estimated and reported distances, i.e. $(a^*,b^*)=\text{argmin}[d^2-(x-a)^2-(y-b)^2]^2$. However, this way of estimation is imprecise due to the two reasons. First, the reported distances are road distances while we estimate straight-line distances. Second, NLS estimation sometimes gave implausible results for the instances of very long reported distances (this was especially true for rural schools where the number of observations is very small).

[3] The distance between two locations with coordinates (x,y) and (a,b) is computed according to the formula $[((x-a)*110.7)^2+((y-b)*84.1)^2]^{0.5}$ using the fact that 1° of geographical longitude is approximately equal to 84.1km and 1° of latitude is approximately equal to 110.7km.

respondents, as well as other 88 respondents with missing data. Due to a small number of excluded observations, we consider sample selection not to be an important issue.

Rural and urban areas differ dramatically in terms of access to education, stock of parental human capital and labor market situation (see Table 3 for details). Urban respondents always have preschool and primary school and nine times out of ten also secondary school in the community they live in. By contrast, only about one fifth of rural residents live in communities with a secondary school. Even more striking difference is between secondary education enrollment rates: 68 and 76 percent of the urban sample were enrolled in 2002 and 2003, respectively; whereas for the rural areas these numbers are only 27 and 36 percent.

The stock of parental education is much lower in rural areas. Around 55 percent of mothers and 60 percent of fathers living in urban areas have more than basic education, while in the countryside these figures are respectively 13 and 25 percent. Majority of urban parents either are wage earners or have been such in the past. In rural areas, however, this holds only for about one fourth of fathers and one eighth of mothers. Family structure is quite different, too: urban teenagers have on average 2.2 siblings (including those no longer living in the household), while rural kids have 3.5 siblings. These sharp differences suggest that models of secondary enrollment should be estimated separately for urban and rural teenagers.

4. Methodology and empirical specification

In this paper we estimate two models of secondary school enrollment over the sample of teenagers with basic education. Firstly, we estimate individual-level pooled probit model:

$$y_{it}^* = \boldsymbol{\beta}'\mathbf{x}_{it} + \varepsilon_{it}, \quad \varepsilon_{it} \sim N(0; 1); \qquad y_{it} = 1 \text{ if } y_{it}^* > 0, \; y_{it} = 0, \text{ if } y_{it}^* \leq 0. \tag{1}$$

Here y^* is unobserved latent variable, y is the enrollment indicator, $\mathbf{x}$ is a vector of different covariates described in details below, and ε is normally distributed error term; i is household indicator, while t refers to repeated observations within household, due to presence of several

siblings of relevant age and/or to the household being surveyed twice, in 2002 and 2003 (a year dummy is included in **x**). Some of the covariates (namely, households' distances to schools and universities, and some community characteristics) are likely to be correlated with [unobserved] taste for education. In order to alleviate potential endogeneity bias in estimating effects of these covariates we control for migration history of individuals since 1990. To account for possible correlation in the score across *t*, robust variance matrix estimation is applied. We allow for correlation of standard errors within communities.

Secondly, we use unobserved family effect probit model. This specification is estimated using mixed sibling-panel data structure described above (on average, there are about 2 siblings aged 14-19 per family) and the generalized estimating equations (GEE) approach by Zeger, Liang, and Albert (1988). The model can be written as follows:

$$\Pr(y_{it}=1|\mathbf{x}_{it}, c_i)= \Phi(\boldsymbol{\beta}'\mathbf{x}_{it} + c_i), \quad t=1,\ldots,T_i \tag{2}$$

Here, y, **x**, i, and t are as before, c_i is unobserved family effect, and Φ is a standard normal cumulative distribution function[4]. We assume that, conditional on migration history, unobserved family effect is no longer correlated with distance and community characteristics variables, so that $c_i|\mathbf{x}_i,D_i \sim N(\alpha+\psi D_i, \sigma_c^2)$. Here, $\mathbf{x}_i$ is the vector of all covariates across all observations in household i, D_i is migration indicator, and σ_c^2 is the conditional variance of c_i, which is assumed not to depend on $\mathbf{x}_i$.

We are interested in estimating average partial effects (APEs) of relevant explanatory variables on secondary school enrollment. For a continuous (for notational simplicity) regressor x_j, the partial effect of immediate interest is $dE(y|\mathbf{x})/dx_j$. However, in the case of unobserved heterogeneity we estimate average partial effect, i.e. $E_c[dE(y|\mathbf{x},c)/dx_j] = E_D[\beta_{cj}\varphi(\boldsymbol{\beta}_c'\mathbf{x} + \alpha_c +$

[4] Zeger et al. (1988) derive consistency and asymptotic normality of estimates under assumption of normal distribution of unobserved effects. In the GEE approach to unobserved effects binary response models, one does not need to fully specify the distribution of the population, but only a marginal distribution $P(y_{it}|\mathbf{x}_{it})=F(\boldsymbol{\beta}'\mathbf{x}_{it})$, with the result that $E(y_{it}|\mathbf{x}_{it})=E(y_{it}|\mathbf{x}_i)$ for all t. Given model (2) and normality assumption of unobserved effects, one gets $P(y_{it}|\mathbf{x}_{it})=\Phi(\boldsymbol{\beta}_c'\mathbf{x}_{it})$, where $\boldsymbol{\beta}_c = \boldsymbol{\beta}/(1+\sigma_c^2)^{1/2}$ are *population-averaged* parameters. This approach is often referred to as a *population-averaged* model.

$\psi_c D$)], where subscript *c* means that parameter vector is scaled by $(1+\sigma_c^2)^{-1/2}$. The unobserved family effect probit model gives consistent estimates of the APEs (for details, see Wooldridge, 2002, pp. 486-490).

The GEE method uses multivariate weighted nonlinear least squares estimation based on some choice of 'working' correlation matrix $V(y_i|\mathbf{x}_i)$ (e.g. so called exchangeable one, with all off-diagonal correlations being equal). Here, robust variance matrix estimation is applied as well. Even with a misspecified variance function this approach is likely to be more efficient than pooled probit model (see Wooldridge, 2002, p.487).

The choice of explanatory variables is described in details below.

a) *Family background*

As suggested by both theoretical literature (see for instance Ermisch and Francesconi (1999, 2001), Rey and Racionero (2002)) and substantial empirical evidence we include parental education as explanatory variables for educational choice of an individual. Recent empirical studies, which confirm that schooling decisions are affected by parental education, family income, gender, the presence, number and gender of siblings, rural-urban location, as well as county level socio-economic characteristics, include Dustmann et al (2002; UK), Tansel (2002; Turkey), Al-Qudsi (2003; five Arab countries), Connelly and Zheng (2003; China), Bommier and Lambert (2004; Brazil), Chevalier (2004; UK), Corak et al (2004; Canada), Gündüz-Hoşgör and Smits (2005; Turkey).

Several empirical studies have found that number of siblings negatively affects propensity to enroll (see for instance Buchmann and Hannum (2001)). A common explanation is that the available resources (including parents' time) have to be divided among children. Bommier and Lambert (2004) test whether the impact of siblings is driven by competition for scarce resources or direct interactions between siblings. Their results show that although sibling rivalry exists, it does not exclusively arise from the competition for scarce resources and direct interactions are in

place. Thus, number of siblings is included in the analysis; moreover, the model also differentiates between younger and older siblings and their gender.

Note also that even though we do not include family income and parental occupation in the model, the second specification with unobserved family effects implicitly account for the effect of these variables.

b) Costs of schooling

We proxy forgone earnings by local labor market conditions. The commonly used measurement is local unemployment rate for individuals with low level of education. Rice (1999), for instance, shows that participation in further education in UK is higher in regions with higher unemployment. However, unemployment may not be so useful measure in the Albanian context given that many teenagers are working in family farms and nonagricultural business and thus would not be considered unemployed. Instead we use district level paid employment rates for the population aged 20-24 with basic education[5]. The easier is access to paid employment of individuals with just basic (8 years) education the higher are opportunity costs of secondary education. Also, proximity to big cities is considered to capture present employment opportunities and forgone earnings. On the other hand, living closer to cities may provide greater incentives for enrollment because employment opportunities for workers with higher level of education are presumably better in big cities. Therefore, *a priori* the effect of minimum distance to cities is not clear.

In order to measure direct costs of schooling we include variables to evaluate accessibility of secondary schools. First variable is whether a secondary school is present in the community. When it is not the case, the data provides information on cost of commuting to the main school

[5] Gender-specific rates of paid employment for 20-24 years olds with basic education were computed for each of the 36 districts based on Population Census 2001.

serving the community.[6] Given that this data may be noisy, and in order to capture time costs as well, distance from the residence location to the main secondary school serving the community is added to the model. These variables turned out to be highly correlated in cities, but not in rural areas. Therefore, we exclude the commuting cost variable from the model for urban areas.

We hypothesize that prospects of enrollment in higher education after secondary education are important for the decision of completing secondary level of education itself. Here, we want to test how important are potential obstacles to enrollment in universities for completion of the secondary education. Given empirical findings of negative relationship between a distance from the universities and propensity to continue education (e.g. Frenette (2006)), distance to the closest university city is included in the model.

We acknowledge, however, that residential location might be endogenous to education decision, and so unobserved errors might be correlated with explanatory variables. One can argue that households which highly value education are likely to move closer to a [better] secondary school and/or to a university city; hence, an unobservable taste for education might explain both secondary school enrolment and proximity to schools and universities. First, we perform exogeneity testing for the dummy indicating whether a household resides in urban or rural area based on pooled probit model using the suggestion of Rivers and Voung (1988). The test involves testing for significance the coefficient estimate of the residuals as one of the regressors in the schooling equation. The residuals come from the auxiliary regression of the indicator variable for urban area on exogenous variables and identifying instruments[7]. The test failed to reject the null hypothesis of exogeneity of the urban dummy. This justifies modeling secondary enrollment separately in urban and rural areas.

[6] The main school is defined (according to the largest number of students from the given community) in the community questionnaire by the community leader. The cost is set to zero if there is a school in the community.

[7] The list of identifying instruments includes dummies for region of origin (which might differ from region of residence for migrants) and a dummy indicating whether a child is household's head's own child. The results are not shown for brevity.

Similarly, distance to secondary school and community characteristics might be endogenous to education decision. Therefore, we performed Rivers and Voung (1988) test for distance variables and community characteristics separately for urban and rural areas. The exogeneity hypothesis was rejected for the presence of a secondary school in a community in rural sub-sample and for distance variables to a secondary school and non-university city, as well as district population with upper secondary or higher education in urban sub-sample. To mitigate the potential bias of these coefficients we control for migration history of individuals since 1990 to capture heterogeneity in propensity of schooling between stayers and movers. In rural sample we also distinguish migrants within the same district and coming from another district (a district is a larger territorial unit than a community). Migrants from other communities constitute 20 percent in the urban sample and 8 percent in the rural sample. Hence the remaining endogeneity bias, if any, is likely to be small, especially as far as rural sample is concerned.

While the discussion above is related to endogeneity caused by households' decisions, school placement might be endogeneous, too: if schools are placed where enrollment would be lowest in their absence, the estimated effects of access to schools on enrollment would be biased downward. On the other hand, policymakers might build/close schools in communities which are more/less politically powerful and more/less education-oriented; this would lead to an upward bias.[8] To test for this problem in our data, we have used a community-level dummy *NEW* indicating whether the main secondary school serving the community has been built or substantially improved during the last five years. The test of Rivers and Voung (1988) has not rejected exogeneity of this variable with respect to enrollment[9]. As another check, this dummy

[8] We refer to Filmer (2004, pp. 10-12) for a survey of results on endogenous school placement.

[9] Community-level proportions of Catholic and Orthodox believers (respectively, ethnic Greeks) are used as identifying instruments in the rural (respectively, urban) sample: these variables are not correlated with the error in the enrollment equation, while secondary schools are significantly more likely to be built or improved in communities with high proportion of Orthodox believers (respectively, ethnic Greeks) and low proportion of Catholics. In the rural (respectively, urban) sample, the instruments are significant at 0.005 (respectively, 0.05) level, and exogeneity is not rejected with p-value 0.49 (respectively, 0.19). School placement tends to be "high" near the Greece border (location which is positively associated with Orthodox and Greek instruments), and "low" near the Serbian border (location which is positively associated with the proportion of Catholics).

and its interaction with the distance to school were included in the enrollment model; the interaction was never significant, suggesting that the distance effects are not distorted by endogenous placement. We conclude thus that this problem does not bias our estimates.

c) Other variables

As a proxy for school quality we use proportion of teachers with higher education. This variable is imputed from Population Census 2001 data in the following way: (i) the village (smallest territorial unit) where the main secondary school serving the community is located is identified from the LSMS 2002 community questionnaire; (ii) number of employed persons, whose workplace in April 2001 was this village and whose occupation code was "secondary school teacher," is found from Census individual records; (iii) proportion of persons with university education in this group is found from Census data. Typically there is one secondary school in the village with big cities being obvious exceptions.[10] In the latter case we rely on the assumption that proportion of teachers with university degree is homogeneous across schools in the city. This assumption seems to be plausible because overall variation of this indicator is not big: for 99% of the urban sample it ranges between 71 and 100 percent.

Additionally, the following variables were included in the model. Firstly, given that agriculture has the dominant role in the economy, those teenagers whose family owns land may be less likely to enroll in school and more likely to work in family's farm. Secondly, since 1989 Albania has experienced massive emigration (about 20 percent of population left the country – see for details Galanxhi et al (2003) and World Bank (2003)). To test whether education is perceived as a tool which facilitates emigration we examine whether individuals who have close relatives residing abroad are more likely to enroll in school.

Note that in this paper we focus on the obstacles to education and do not examine the payoff to secondary school graduates in the labor market in details. Simple indicators provide mixed

[10] Villages in the sense of the smallest territorial units include also big cities.

evidence on returns to education in Albania. The following description draws from World Bank (2004) (based on Berryman (2004); Hazans (2004a, 2004b); see Tables 4, 5 and Figure 4 for details). To start with, the highest unemployment rates are found for the labor force members with secondary education. On the other hand, completed secondary education (as opposed to basic) strongly reduces unemployment risk for urban men aged 25 to 34 and urban women of all ages. Earnings differentials between secondary and basic education are on average small but reach 20 percent for men in private sector and 40 percent for women in public sector. There are significant returns to a university education, both in terms of employability and in terms of earnings[11]. Yet unemployment rates among university graduates in 2002 were 7.4 percent for men and 9.6 percent for women – well below national average but high in absolute terms. The data indicate a 'low skills' equilibrium, with a small share of jobs that pay relatively well for those that have a university degree. Overall, the preliminary evidence from the data shows that the significant part of return to secondary education is linked to further returns to higher education.

5. Results

In this section we analyze the determinants of secondary enrollment for 14 to 19 years old Albanians with completed basic (8 years) education. The model is estimated separately for rural (columns (1) and (2) in Table 6) and urban population (columns (3) and (4) in Table 6). Specifications (1) and (3) are individual-level pooled probit models which control for household structure, parental education, community characteristics, and the distance variables: the distance to the main secondary school serving the community and the distance to the closest university city, as well as migration history. Specifications (2) and (4) are unobserved family effect probit

[11] According to Mincer-type estimates (adjusted for weights and clustering on primary sampling units), an employee with university degree earns 72 percent more than otherwise similar employee with basic education.

models estimated using the generalized estimating equations approach with the same control variables. The results are presented in two parts: those concerning family background and those related to cost and quality of schooling.

a) Family background

The effect of family structure variables and parental education on secondary school enrollment is fairly standard. Parental education has a strong positive impact on enrollment. However, unlike many transition countries (see for instance Hazans et al (2005)), in Albania the effect of father's education is stronger and more significant than that of mother's education (with this pattern being more prominent in urban areas). In cities, mother's higher education appears to be insignificant. One possible explanation for this is that with very few exceptions, urban children who have mothers with higher education also have fathers with completed higher education level.

The gender gap in secondary school enrollment is found only in urban areas: other things equal, urban girls are significantly more likely than boys to study in secondary school (partial effect is about 12 percentage points in pooled probit and about 10 percentage points using GEE approach). Behavior of urban families which, other things equal, tend to send girls rather than boys to secondary school, is consistent with the fact that secondary education reduces unemployment risk for young urban females a lot stronger than for their male counterparts (Figure 4), while in rural areas the effect of secondary education on unemployment risk is equally weak for both genders.

As long as siblings are concerned, our findings suggest that both in cities and in rural areas presence of younger siblings decreases the propensity to enroll in secondary school, more so for urban population. This result is in line with the idea that in developing countries the cost of high fertility may be borne by older siblings, rather than by the parents (Buchmann and Hannum (2001)). The older children might run the household chores, do the farm work, or contribute to

the household income. Depending on the age difference between siblings, this can adversely affect older siblings' secondary enrollment either directly or through poor attendance while in primary school. This suggests that lack of public child care might be an obstacle for secondary school participation. Indeed, other things equal, propensity to enroll in secondary school in rural areas is 7 percentage points higher if a pre-school is present in the community (about the same size in unobserved family effect probit model, although not statistically significant). In cities, a similar effect is produced by the presence of a grandmother in the household.

Gündüz-Hoşgör and Smits (2005) argue that under the influence of patriarchal culture and due to the fact that girls most often out-marry into the family of their husbands, parents may prefer to invest in the education of their sons. This would imply that girls' enrollment chances are lower if they have a higher number of brothers, and this effect is stronger than similar effect for boys. We found that this is the case in rural Albania, but only as long as older brothers are concerned. Interestingly, Gündüz-Hoşgör and Smits (2005) do not find significantly different impact of number of brothers on secondary enrollment of boys and girls in Turkey.

Children from rural families have higher enrollment propensity when household members have worked abroad in the last five years or have relatives who live abroad. Plausibly, remittances may ensure possibility to study rather than work to children from such families. However, this effect (although slightly weaker) remains also when household per capita income is controlled[12]. Hence, the following explanation seems to be more likely: contacts with the outside world enhance understanding of the value of education and provide better information flows about future prospects. This effect is not significant in cities where information about education opportunities and returns to schooling is presumably easier to obtain. However, one cannot exclude also that positive association between enrollment of rural teens and work of family members abroad simply reflects unobserved heterogeneity: the effect is smaller and not

[12] These results are available on request; due to data limitations they refer only to the 2002 sub-sample.

significant in the model with unobserved family effects; on the other hand, this particular coefficient might be biased due to correlation between unobserved family effects and migration history of household members.

Contrary to the anticipated negative effect of land ownership in rural areas, the results show that children from families who own land are more likely to be enrolled in secondary school. Possible explanation for it may be implicit wealth effect.

About three quarters Albanians describe themselves as Muslims[13], although most of them either do not practice Islam on everyday basis or practice the most liberal model of it. However, results suggest that both in rural and urban areas there is no difference whatsoever between Muslim and non-Muslim individuals (or communities) in terms of secondary enrollment in general, as well as for each gender. These results are available from the authors on request (models presented in the paper do not control for religion; effects of other variable hardly change).

b) Measures for direct and indirect costs of schooling and quality of schooling

Access to school is a very significant factor for enrollment in secondary education, especially in rural areas. The absence of secondary school in the community in rural areas reduces propensity to enroll by about 17 percentage points. Furthermore, a 10 leks increase in one-way commuting costs from the community of residence to a secondary school (which varies from 0 to 80 leks for 90% of the sample and from 100 to 300 leks for remaining 10%) reduces enrollment by about 2 percentage points.

Distance to the main school serving the community has negative impact on participation in secondary education. The data strongly suggest that the size of this effect is decreasing in distance, hence we use logarithmic specification. After accounting for the presence or absence of

[13] This proportion may be somewhat overstated because information was provided by one household member, often belonging to the oldest generation.

a secondary school in the community and keeping commuting costs constant, doubling the distance would lead to a fall in secondary school enrollment by 2.7 percentage points in rural areas and by 3.4 percentage points in cities. At average observed distances, the marginal effect of a 1 km increase in distance is 1.3 percentage points in rural areas and 2.9 percentage points in cities. These effects almost double in size when commuting costs and presence of a school in the community are not controlled for (these results are available on request). These findings are in line with the previous research on the impact of the distance from schools on enrollment rates (see e.g. Tansel 2002, Attanasio et al 2005).

To assess opportunity costs of continuing education we look at the local labor market conditions. Easier access to paid employment for young individuals with basic education has negative and significant effect on secondary enrollment in both rural and urban areas. In rural areas importance of social capital and information availability is highlighted by the fact that enrollment is higher in communities located in districts where share of population with at least secondary education is higher.

School quality appears to be important for enrollment decision: a 10 points increase in proportion of highly educated teachers raises enrollment by 2 and 7 percentage points in rural and urban areas, respectively.

Proximity to a university city (as opposed to other urban centers[14]) substantially increases likelihood of secondary enrollment in rural areas. To test whether this effect is related to prospects of further education rather than to immediate employment opportunities in big cities after completing secondary education, non-university cities were divided into two categories: (1) cities with less than 2000 employees; (2) cities with at least 2000 employees. Distances to closest city from each category (D_1 and D_2) were included in the model along with distance to the closest university city, D_3. If the enrollment effect of proximity to cities is driven by employment

[14] In some specifications we included the distance to the non-university urban centers. The effects, however, were not statistically significant. The results are not shown for brevity.

opportunities, one should expect the effect of D_2 to be stronger than that of D_1, but both effects turned out to be insignificant (and apparently having a wrong sign; interestingly, D_2 and D_3 are not correlated, while D_1 and D_3 are negatively correlated).

In urban areas, negative effect of distance to the closest university on secondary enrollment has emerged in 2003, plausibly as a response to opening the market for private universities and increasing quotas for fee-based students in public universities. The above findings suggest that policies aimed at developing tertiary education may have positive spillover effects on enrollment in secondary education.

6. Conclusions and policy implications

This paper analyzes the determinants of participation in secondary education and examines reasons for low enrollment rates in secondary schools in Albania in 2002-2003. Our results are consistent with the previous research on determinants of educational attainment in showing that parental education and household structure are important for the decision to continue education after basic schooling level. Moreover, easier access to both secondary schools and universities appear to have a significant positive impact on propensity to enroll in secondary education.

While poor access to schools appear as important obstacle to enrollment, which justify school subsidies introduced in 2002, there seems to be some cost efficient alternatives to building new schools. Potential obstacles to enrollment in higher education, such as large distance from universities, on one hand, and lack of public child-care on the other, decrease substantially the likelihood of secondary enrollment in rural areas. The above findings suggest that developing tertiary education (including private) may have positive spillover effects on secondary enrollment in developing countries. Unlike building new schools, opening the market for private universities is virtually costless and can in a relatively short time affect secondary enrollment in large territories. Additionally, there is some evidence of the need for better information about education opportunities and returns to schooling.

Increasing proportion of secondary school teachers with university education in those urban schools where it is below 80 percent (perhaps even considering fast-track schemes of re-qualification of currently unemployed persons with higher education) is another possibility. Enhancing availability of public child-care system would increase enrollment of children with younger siblings (again, without increasing direct costs related to secondary education).

To see the whole picture of participation in secondary education one needs to pay closer attention to incentives for enrollment. In particular, issues that require further research are how many graduates from secondary schools intend to enroll into higher education; what are the returns to schooling for secondary school graduates and university graduates in terms of wages and employment stability, adjusted for sample selectivity.

References

Al-Qudsi, S. (2003), Family Background, School Enrollments and Wastage: Evidence from Arab Countries, *Economics of Education Review* 22 (6), 567-80.

Attanasio, O., C. Meghir, and A. Santiago (2005), Education Choices in Mexico: Using a Structural Model and a Randomized Experiment to evaluate Progresa. *IFS* Working Papers, EWP05/01.

Beblo, M. & C. Lauer (2004), Do Family Resources Matter? Educational Attainment During Transition in Poland, *The Economics of Transition* 12(3), 537-558.

Becker, G. (1964), *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. New York. Columbia University Press.

Berryman, S. (2004), Growth, Human Capital, and Education. *Background note for World Bank Country CEM: Albania*.

Bjorkland, A., M. Lindahl & E. Plug (2004). Intergenerational Effects in Sweden: What Can We Learn from Adoption Data? *IZA Discussion Paper* 1194.

Black S., P. Devereux & K. Salvanes (2005), Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital, *American Economic Review* 95(1), 437-449.

Bommier, A., & S. Lambert (2000), Education Demand and Age at School Enrollment in Tanzania. *The Journal of Human Resources* 35 (1), 177-203.

Bommier, A. & S. Lambert (2004), Human capital investments and family composition, *Applied Economics Letters* 11 (3), 193-196.

Buchmann, C., & E. Hannum (2001). Education and stratification in developing countries. *Annual Review of Sociology* 2001, 77-102.

Cameron, S.V. & J.J. Heckman (2001). The Dynamics of Educational Attainment for Black, Hispanic, and White Males, *Journal of Political Economy* 109, 455-499.

Cameron S. & C. Taber (2004). Estimation of Educational Borrowing Constraints Using Returns to Schooling, *Journal of Political Economy* 112 (1), 132-182.

Card, D. (1995), Earnings, Schooling, and Ability Revisited, *Research in Labor Economics* 14, 23-48.

Carneiro, P., & J. Heckman (2002). The Evidence on Credit Constraints in Post-secondary Schooling, *Economic Journal* 112 (482), 705-34.

Chevalier, A. (2004). Parental education and child's education: a natural experiment, *IZA Discussion Paper* 1153.

Chevalier, A., C. Harmon, V. O'Sullivan & I. Walker (2005). The Impact of Parental Income and Education on the Schooling of Their Children. *IZA Discussion Paper* 1496.

Connelly, R. & Z. Zheng (2003). Determinants of School Enrollment and Completion of 10 to 18 Year Olds in China. *Economics of Education Review* 22 (4), 379-88.

Corak, M., G. Lipps, & J. Zhao (2004). Family Income and participation in Post-Secondary Education, *IZA Discussion Paper* 977.

Duflo, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. *The American Economic Review* 91 (4), 795-813.

Dustmann, C., N. Rajah, & A. van Soest (2002). Class Size, Education, and Wages, *IZA Discussion Paper* 501.

Ermisch, J. F., & M. Francesconi (1999). Educational Choice, Families, and Young People's Earnings, *Journal of Human Resources* 35 (1), 143-176.

Ermisch, J. F., & M. Francesconi (2001). Family Structure and Children's Distribution, *Journal of Population Economics* 14 (2), 249-270.

Fan, C., M. Spagat, & J. Overland (1999). Human Capital, Growth, and Inequality in Russia, *Journal of Comparative Economics* 27, 618-643.

Filmer, D. (2004). If You Build It, Will They Come? School Availability and School Enrollment in 21 Poor Countries, *World Bank Policy Research Working Paper* 3340.

Foster, A. & M. Rosenzweig (1996). Technical change and human-capital returns and investments: evidence from the green revolution. *American Economic Review* 86 (4), 931–953.

Frenette, M. (2006). Too Far to Go On? Distance to School and University Participation, *Education Economics* 14 (1), 31 – 58.

Galanxhi, E., E. Misja, D. Lameborshi, M. Lerch, P. Wanner, & J. Dahinden (2003) Migration in Albania, *INSTAT* and *Swiss forum for migration and population Distribution*: Tirana and Neuchâtel.

Gjonça, A., E. Murthi, L. Xhillari, E. Kapllani, & A. Misha (2004). Standard of Living and Social Inequalities in the 21st Century Albania: Results from LSMS 2002 and Population and Housing Census 2001. *INSTAT*: Tirana.

Gündüz-Hoşgör, A. & J. Smits (2005), Effects of family background characteristics on educational participation in Turkey, *International Journal of Educational Development* (forthcoming).

Hazans, M. (2004a). Employment and unemployment in Albanian labor market: A part-time working country. *Background note for World Bank Country Economic Memorandum: Albania.*

Hazans, M. (2004b). The Wage Structure in Albania: Evidence from the Living Standards Measurement Survey 2002. *Background note for World Bank Country Economic Memorandum: Albania.*

Hazans, M., O. Rastrigina, & I. Trapeznikova (2005), Family Background and Schooling Outcomes before and during the Transition: Evidence from the Baltic Countries, *BICEPS working paper*, http://ssrn.com/abstract=699443 (Revise and resubmit to *J. of Population Economics*).

Rey E., & Racionero, M. (2002), Optimal Education Choice and Redistribution when Parental Education Matters, *Oxford Economic Papers* 54, 435-448.

Rice P. (1999), The Impact of Local Labour Markets on Investment in Further Education: Evidence from the England and Wales youth Cohort Studies, *Journal of Population Economics* 12, 287-312.

Rivers, D. & Voung, Q. H. (1988). Limited Information Estimators and Exogeneity Tests for Simultaneous Probit Models, *Journal of Econometrics* 39, 347-366.

Spagat, M. (2002a), Human Capital and the Future of Transition Economies, *CEPR Discussion Papers* 3517.

Spagat, M. (2002b), Human Capital, Growth and Inequality in Transition Economies, *CEPR Discussion Papers* 3556.

Tansel, A. (2002), Determinants of School Attainment of Boys and Girls in Turkey: Individual, Household and Community Factors, *Economics of Education Review* 21, 455-470.

Varga, J. (2006), The Role of Labour Market Expectations and Admission Probabilities in Students' Application Decisions on Higher Education: The Case of Hungary. *Education Economics*, Vol. 14, No. 3, 309–327.

Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

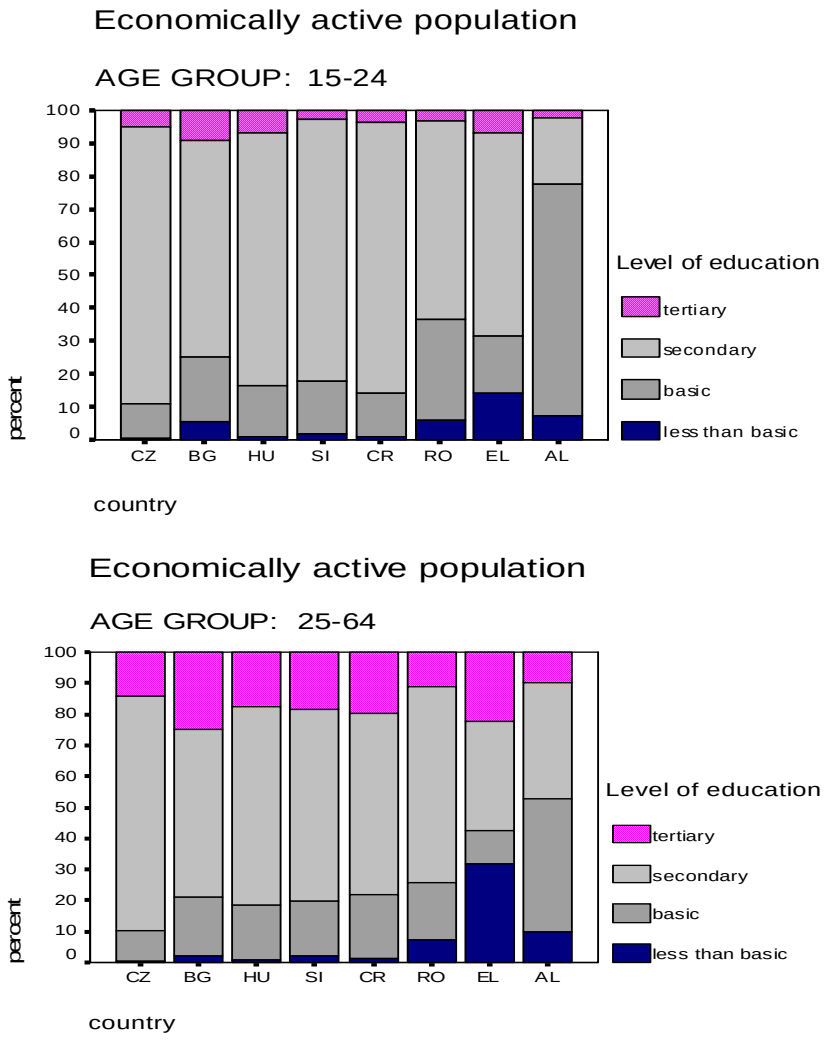
World Bank (2003). *Albania Poverty Assesement. Report* 26213, Washington, DC: Oxford Press

World Bank (2004). Albania: Sustaining Growth Beyond the Transition. *A World Bank Country Economic Memorandum. Report* 29257-AL, Washington, DC: Oxford Press.

World Bank & INSTAT (2003). Albania Living Standards Measuring Survey 2002. *Basic Information Document* (available at www.worldbank.org/lsms), Washington, DC: Oxford Press.

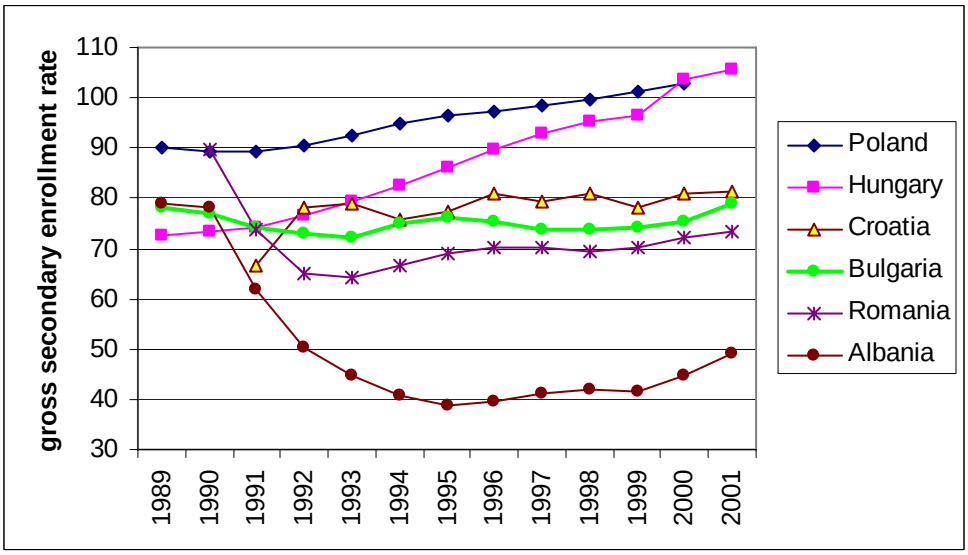
Zeger, S., K.-Y. Liang, & P. Albert (1988), Models for Longitudinal Data: A Generalized Estimating Equation Approach, *Biometrics* 44, 1049–1060.

Figure 1. Educational attainment of labor force in selected countries of Central and South-Eastern Europe, 2001



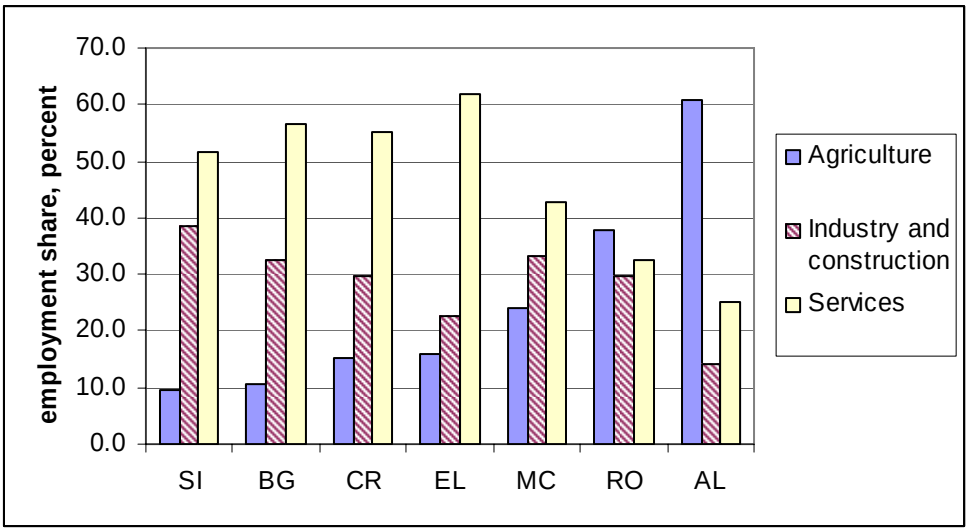
Notes: Country abbreviations: CZ – Czech R., BG – Bulgaria, HU – Hungary, SI – Slovenia, CR – Croatia, , RO – Romania, EL – Greece, AL – Albania. *Source*: Calculation based on LABORSTA data (www.ilo.org).

Figure 2. Secondary school enrollment rates in selected CEE and SEE countries, 1989-2001



Source: UNICEF.

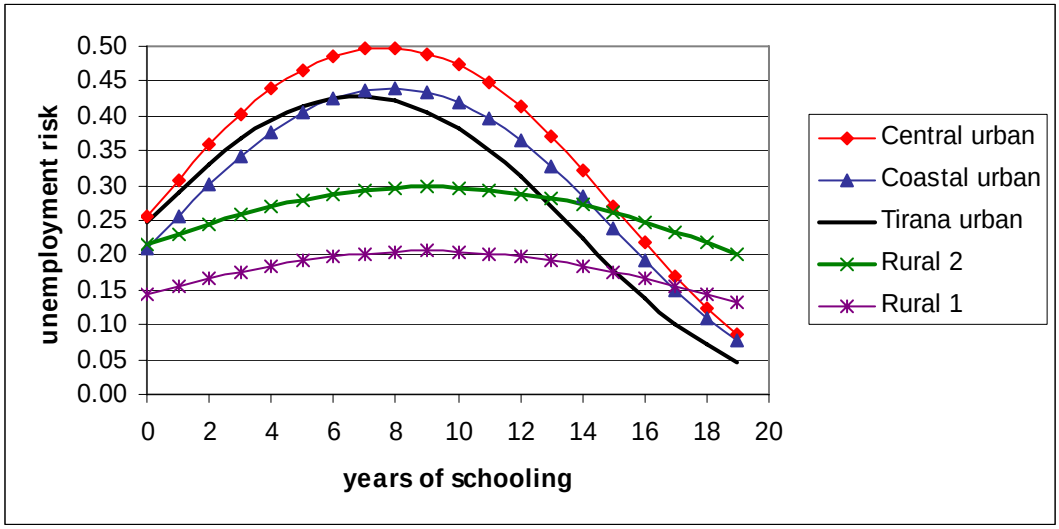
Figure 3. Employment by sector in selected CEE and SEE countries, 2002.



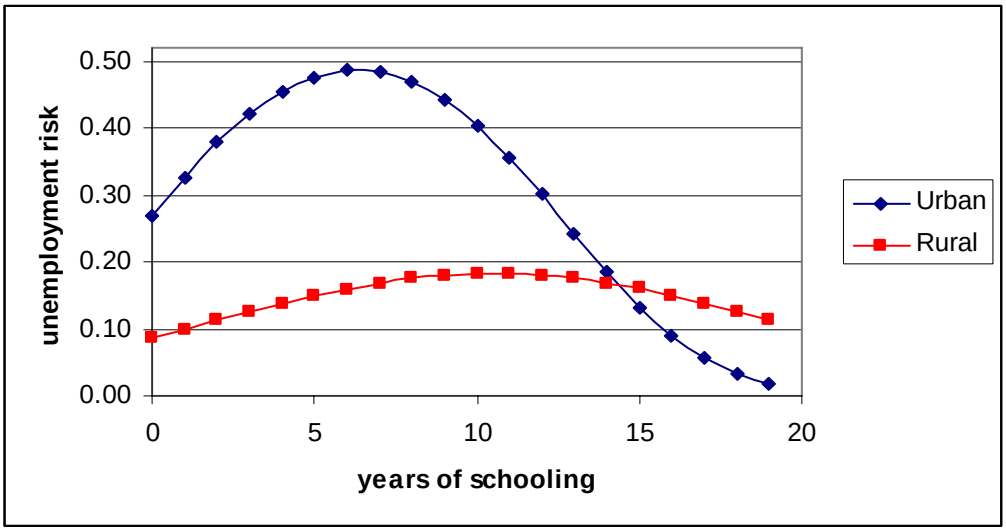
Notes: SI – Slovenia, BG – Bulgaria, CR – Croatia, EL – Greece, MC – Former Yugoslav Republic of Macedonia, RO – Romania, AL – Albania. *Sources:* Calculation based on LFS data presented in Franco-Blondal, 2003, LABORSTA database, and Albanian LSMS 2002 data.

Figure 4. Unemployment risk[a] for economically active Albanians (students and pensioners excluded) by years of schooling and residence. April 2001

a) men, aged 25-34 [b]



b) women, aged 15-64 [c]



Notes: [a] Profiles are based on a logit model with the following controls: six age groups; marital status (for women also number of children and number of adult women in the household); [number of years of] schooling and schooling squared; dummies for residence in urban area, Coastal Albania, Mountain Albania and Tirana city, as well as their interactions with schooling and schooling squared; dummies for post-1989 immigrants from abroad and from other districts; dummy for having agricultural land located in the district of residence and belonging to a household member.

[b] *Coastal urban, Central urban, Tirana urban, and Rural 2* – marital status, migration history and agricultural land ownership fixed at average level for *urban* men aged 25-34, hence comparing these four curves allows to find net effect of residence on unemployment risk.

Rural 1 – marital status, migration history and agricultural land ownership fixed at average level for *rural* men aged 25-34. Hence difference between *Rural 2* and *Rural 1* is due to the difference in average characteristics (except schooling) of urban and rural men, main factor being agricultural land ownership.

[c] Both in *Urban* and *Rural* profiles characteristics other than residence and schooling are fixed at their mean values for the whole sample, hence comparing these two profiles allows to find net effect of urban residence on unemployment risk.

Source: Calculation based on 2001 Population Census data (796378 observations for men, 546257 observations for women; only respondents aged 15 to 64 included).

Table 1. Net enrollment rates by age or level.
Albania (2002), selected transition countries, and OECD (2001)

Country	Net Enrollment rates for 5-14 year olds (Basic)	Enrollment rates for 15-19 year olds (Secondary)	Enrollment rates for 20-29 year olds (Tertiary)
Czech Republic	97.2	75.0	21.2
Hungary	99.4	79.0	20.0
Poland	94.3	85.5	25.8
Slovak Republic	97.9	74.6	12.0
Russian Federation	83.3	70.8	15.4
OECD mean	98.2	77.7	21.8
Albania	**93.3**	**38.7**	**8.7**

Source: Berryman, 2004.

Table 2 Educational attainment of adult population and enrollment into further education of the youth in the EU and selected countries of Central and South-Eastern Europe, 2002

	EU-15	ACC-12	SI	BG	HU	RO	CY	EL	AL
Education	Percent distribution of population aged 25-64 by highest level of completed education								
Basic or less	35.4	19.3	23.2	28.5	28.6	28.9	33.5	47.3	65.3
Upper secondary	42.9	66.2	62.1	50.4	57.3	61.1	37.4	35.1	28.5
Tertiary	21.8	14.5	14.8	21.1	14.1	10.0	29.1	17.6	6.3
	Enrollment in further education of population aged 18-24 with basic education or less								
	81.2	91.3	95.2	79.0	87.7	76.8	86.0	83.9	9.1

Notes: ACC-12 refers to average indicators for the ten new EU members, Bulgaria, and Romania. Country abbreviations: CZ – Czech R., SI – Slovenia, SK – Slovak R., RO – Romania, HU – Hungary, BG – Bulgaria, EL – Greece, AL – Albania. Albanian data refer to the 2001 (distribution) and 2002 (enrollment). *Source*: Calculation based on LFS data presented in Franco-Blondal (2003) and Franco-Jouhette (2003); for Albania – Census 2001 data, and LSMS 2002 data.

Table 3. Mean characteristics of urban and rural 14-19 year olds with basic education

	Urban	Rural		Urban	Rural
Enrolled in secondary school: 2002	0.678	0.273	Age	16.589	16.454
2003	0.763	0.360	Female	0.501	0.558
Mother's education			**Father's education**		
Secondary	0.217	0.036	Secondary	0.182	0.072
Vocational	0.230	0.082	Vocational	0.256	0.150
Higher	0.092	0.007	Higher	0.154	0.032
Unknown	0.020	0.009	Unknown	0.048	0.071
Household characteristics			**Community characteristics**		
Number of siblings (excl. respondent)	2.228	3.542	District urban/rural population with upper secondary or higher education, %	42.25	14.41
Number of younger siblings	1.250	1.834	District level paid employment rate in 2001 among those aged 20-24 with just basic education, %	5.811	3.506
Number of sisters	1.139	1.882	Preschool is present in the community	1.000	0.548
A grandmother lives in the household	0.151	0.174	Secondary school is present in the community	0.893	0.207
A grandfather lives in the household	0.068	0.062	Number of secondary school teachers	37.782	16.580
HH members worked abroad in the last 5 years or have children living abroad	0.402	0.501	Percentage of secondary school teachers with higher education	93.478	84.138
HH owns agricultural land	0.141	0.927	Students-teachers ratio	20.026	18.496
Main source of household income in the next 12 months[a]			Secondary school is more than 20 km away from the community	0.000	0.057
Work in the civil service	0.229	0.096	Closest secondary school has less than 10 teachers	0.057	0.338
Work in the private sector	0.612	0.436	One way cost of commuting to the main secondary school (leks) [b]	0.000	26.091
Own business or farm	0.065	0.346	Distance[b] to the main secondary school serving the community	0.209	6.702
Transfers or charity	0.073	0.057	**Distances (from the residence)**		
Other	0.022	0.066	To the secondary school attended [c]	2.412	5.874
Regions			Distance[d] to the main secondary school serving the community	1.681	3.081
Tirana	0.265	---	Minimum distance[d] to a university city	18.262	30.213
Central Albania	0.314	0.531	Minimum distance[d] to a city with > 2000 paid jobs	7.828	20.441
Coastal Albania	0.354	0.271	Minimum distance[d] to a district center or a city with ≤ 2000 paid jobs	1.903	9.829
Mountain Albania	0.067	0.198	**Migrated from another community since 1990**	0.201	0.082

Notes: [a] 2002 year only. Current or last occupation. [b] Community level data reported by the community leader. Mean actual self-reported transportation costs for urban areas are 1836 leks per month. [c] Students only; self-reported road distance. [d] Calculated straight line distance.

Table 4. Labor market status by gender and education (population aged 15-64). ***Percent***

Employment Status	Men, by education			Women, by education		
	Basic or less	Secondary	University	Basic or less	Secondary	University
Employed	67.7	74.3	82.9	50.0	49.5	76.3
Paid employment, percent of total	27.6	51.6	83.9	8.7	45.2	89.9
Worked < 40 weeks in the past 12 months[a]	38.3	25.9	11.5	44.8	28.9	18.9
Unemployed 1 [c]	8.0	10.5	4.4	4.0	10.8	3.9
Unemployed 2 [d]	5.2	4.4	2.3	5.0	5.6	4.1
Labor force participation rate 1 [e]	75.7	84.8	87.3	54.0	60.2	80.2
Labor force participation rate 2 [f]	81.0	89.2	89.6	59.0	65.9	84.4
Unemployment rate 1: Unemployed 1/Labor force 1	10.6	12.4	5.0	7.5	17.9	4.9
Unemployment rate 2: Unemployed (1+2)/Labor force 2	16.3	16.8	7.4	15.3	24.9	9.6

Source: Calculation based on LSMS 2002 data. *Notes*: [a] Percent of employed who keep current job for at least one year. [b] <35 hrs per week. [c] Standard ILO definition. [d] Relaxed definition: includes persons not looking for a job in the past 4 weeks but ready to start in two weeks once a job is available (e. g. discouraged workers, seasonal workers etc.). [e] Employed + Unemployed 1. [f] Employed + Unemployed 2.

Table 5. Wage ratio by education, ownership sector, and gender. Albania, 2002.

Education	Wage ratio by education					
	Men			Women		
	Private Sector	Public sector	National average	Private sector	Public Sector	National average
Secondary/Basic	1.21	1.13	1.09	1.07	1.41	1.16
University/secondary vocational	1.60	1.54	1.36	2.57	1.44	1.62
University/secondary general	1.73	1.50	1.42	2.95	1.50	1.73

Source: Berryman, 2004 (based on LSMS 2002 data)

Table 6. Determinants of secondary education enrolment of 14-19 years old Albanians, 2002-2003.

	(1)[a]			(2)[b]			(3)[a]			(4)[b]		
	Rural (mean Y= 0.282)						Urban (mean Y= 0.691)					
	dY/dX	z-value		dY/dX	z-value		dY/dX	z-value		dY/dX	z-value	
Age	-0.049	-4.55	***	-0.048	-4.62	***	-0.058	-4.88	***	-0.059	-4.82	***
Female	-0.051	-1.34		-0.043	-1.29		0.118	3.44	***	0.097	3.16	***
Parental education (vs. basic or less)												
Mother: secondary	0.120	1.43		0.070	0.74		0.162	3.46	***	0.177	3.33	***
Mother: vocational (Rural: vocational or higher)	0.171	3.15	***	0.208	3.81	***	0.099	1.89	*	0.117	2.61	***
Mother: higher	---	---		---	---		0.060	0.64		0.087	1.06	
Father: secondary	0.219	2.75	***	0.208	2.78	***	0.174	3.13	***	0.170	3.05	***
Father: vocational	0.203	3.92	***	0.230	4.73	***	0.222	4.12	***	0.226	4.52	***
Father: higher	0.220	2.11	**	0.216	2.16	**	0.376	5.68	***	0.359	6.69	***
Household characteristics												
Number of younger brothers	-0.013	-0.66		-0.016	-0.92		-0.068	-2.89	***	-0.061	-3.07	***
Number of older brothers	-0.028	-1.60		-0.031	-1.66	*	0.006	0.29		-0.001	-0.05	
Number of younger sisters	-0.037	-2.23	**	-0.035	-1.98	**	-0.101	-4.24	***	-0.097	-4.27	***
Number of older sisters	0.015	1.06		0.016	1.14		-0.023	-1.41		-0.015	-0.96	
A grandmother lives in the HH	0.018	0.42		0.017	0.42		0.091	2.06	**	0.082	1.99	**
A grandfather lives in the HH	-0.083	-1.01		-0.064	-0.86		-0.197	-2.54	**	-0.190	-2.49	**
HH members have children living abroad or worked abroad in the last 5 years	0.072	2.05	**	0.042	1.29		0.004	0.08		0.008	0.24	
Household owns land	0.194	2.89	***	0.195	3.05	***	-0.034	-0.80		-0.037	-0.80	

Table 6 continued. Determinants of secondary enrolment of 14-19 years old Albanians, 2002-2003.

	(1)[a]			(2)[b]			(3)[a]			(4)[b]		
	Rural (mean Y= 0.282)						Urban (mean Y= 0.691)					
	dY/dX	z-value		dY/dX	z-value		dY/dX	z-value		dY/dX	z-value	
Community characteristics												
Secondary school is present in the community	0.165	3.15	***	0.173	3.36	***	0.089	2.19	**	0.113	1.98	**
Percentage of teachers with higher education among secondary school teachers serving the community	0.002	1.68	*	0.001	1.27		0.007	2.13	**	0.005	1.82	*
One way cost of commuting from the community to school	-0.002	-3.67	***	-0.001	-2.71	***	---	---		---	---	
Pre-school is present in the community	0.071	1.90	*	0.049	1.25		---	---		---	---	
District population with upper secondary or higher education, %	0.032	3.69	***	0.023	2.64	***	0.008	1.23		0.010	1.62	
Gender-specific paid employment rate among those aged 20-24 with just basic (8 years) education: log(district rate/national average)	-0.067	-2.68	***	-0.055	-2.15	**	-0.066	-2.26	**	-0.079	-2.66	***
Distances												
Log of distance to the main secondary school serving the community	-0.028	-2.55	**	-0.037	-3.17	***	-0.049	-2.66	***	-0.047	-2.68	***
Log of min distance to a university city	-0.067	-2.12	**	-0.052	-1.70	*	0.009	0.85		0.006	0.58	
Migrated from other municipality since 1990	---	---		---	---		-0.048	-1.04		-0.057	-1.26	
from the same district	-0.281	n.a.		-0.283	n.a.		---	---		---	---	
from a different district	0.057	0.68		0.088	0.92		---	---		---	---	
Year 2003	0.046	1.28		0.058	1.76	*	0.146	3.02	***	0.115	2.75	***
Log of minimum distance to a university city*year 2003	---	---		---	---		-0.034	-2.95	***	-0.017	-1.48	
# obs.	953			953			770			770		
Log pseudolikelihood	-389.1			n.a.			-274.7			n.a.		

Notes: [a] Individual pooled probit models; robust standard errors adjusted for clusters in communities. [b] Unobserved family effect models estimated using GEE approach. robust standard errors adjusted for clusters in households. Not reported controls: regions (Tirana city, Coast, Mountains and Central Albania); dummies for missing parents. ***, **, * indicate that underlying coefficients are significantly different from zero at 0.01, 0.05, 0.10 level respectively.