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Migrants' International Transfers and Educational Expenditure: Empirical Evidence from Albania

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Summary

The present paper analyses the expenditure behavior of Albanian families. The objective is to cast some light upon the relationship between education expenditure and the volume of remittances, sent from abroad by household members. To assess the existence of an education enhancing effect of remittances, an Engel curve framework is employed, where heterogeneity in interests or in bargaining power among the members within the households is assumed. The empirical estimation accounts for the censored nature of the education expenditure through using Heckman two-step as well as a semiparametric model for sample selection. Finally, quintile regression analysis is employed to investigate whether migrants' remittances have a differentiated effect on various quantiles of the conditional distribution of the education consumption.

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Abstract

The present paper analyses the expenditure behavior of Albanian families. The objective is to cast some light upon the relationship between education expenditure and the volume of remittances, sent from abroad by household members. To assess the existence of an education enhancing effect of remittances, an Engel curve framework is employed, where heterogeneity in interests or in bargaining power among the members within the households is assumed. The empirical estimation accounts for the censored nature of the education expenditure through using Heckman two-step as well as a semiparametric model for sample selection. Finally, quintile regression analysis is employed to investigate whether migrants' remittances have a differentiated effect on various quantiles of the conditional distribution of the education consumption.

1 Introduction

Albania remains one of the poorest countries in Europe, notwithstanding its effort to build the foundations for a market-based economy, which recently granted the country a degree of macroeconomic stability, as well as the achievement of the best GDP growth performance in South Eastern Europe. Per capita income remains one of the lowest among the transition economies and poverty is pervasive, with 25 percent of the population living in poverty. Moreover, nearly five percent of the population lives in extreme poverty, which is defined as a situation where basic food requirements are not met (World Bank, 2007).

High rates of unemployment and the severe poverty experienced by the households have induced strong migration pressures. Albanians, among all other transition populations, are the most inclined to leave their country. Although statistics on migration are of poor quality, partly due to the irregular nature of much of the migration, rough estimates suggest that 40 percent of people have some relatives settled outside the borders of the country (UN, 2002). Recently, the government of Albania published figures that quantify the number living abroad as over one million in 2005, representing 30 percent of the total population.

These large migration flows provide Albania with an important source of capital in terms of external remittances. In 2007 workers' official transfers represented 27 percent of national GDP and exhibited a stable increase over time (WDI, 2008). Despite the impressive size of the remittance flows, little is known about the use of these transfers by Albanian families. In particular, it is still a matter of speculation whether this money is channeled towards investments in human and physical capital or is spent on consumer goods. Economists are often skeptical regarding the capacity of remittances to sustain economic development and are equally critical of the use of remittances for consumption, with no funding left for saving and investment. It should be noted, however, that remittances alone cannot provide a solution for a poor economic environment, insofar as the absence of a sound economic climate hinders the utilization of remittances for investment.

While the Albanian economy is showing positive rates of growth, it still faces several constraints, which include, among other things, poor governance across all sectors of the economy, an inefficient public sector, which constrains improvements in the business environment, and poor public service quality. Another critical issue is represented by schooling performance. Albania, compared to most transition countries, is at the bottom in terms of educational attainment. With an average school attainment of 8.5 years, the country is well behind its neighboring states. During the post-transition period, gross enrolment rates showed a decreasing trend at all education levels, except for tertiary level (World Bank, 2005).

The objective of this paper is to investigate the link between international remittances and education in Albania, in order to shed light on the effectiveness of private transfers in enhancing investment in education and stimulating a key sector such as schooling. In this study, the effect of remittances on education is assessed employing an Engel curve framework, which represents a valuable way to analyze household consumer behavior. The classical theoretical framework, where different income sources are pooled together within the family, is relaxed. In contrast, assuming heterogeneity in interests or in bargaining power among members within the households, distinct income sources, including migrants' transfers, are allowed to exert an independent effect on education spending. This methodology allows the determination of the actual propensity to consume education goods out of transfer and non-transfer income separately.

To my knowledge, the empirical studies which directly estimate an educational expenditure function are limited, as typically a full system of equations, which exploit budget shares on different items, is used. However, given that the research objective of this study is to directly investigate the effect of migration on human capital, through its influence on the spending on education, the analysis of a full system of equations for different items is beyond the scope of the current research. The remainder of the paper is organized as follows. Section 2 presents a brief review of the literature. Section 3 provides a background of education system in Albania. Section 4 describes the data set used and provides a preliminary summary of the most relevant variables. Section 5 presents the econometric results and section 6 provides summary and conclusions.

2 Literature Review

An Engel curve describes how consumer spending behavior varies with income levels, holding prices fixed. In the empirical literature, the estimation of Engel curves has been applied across a wider set of applications, to quantify the total expenditure elasticities for different categories of commodities, including education.

Different contributions estimate Engel curves to scrutinize the different marginal propensities to consume out of distinct income sources. The literature on household decision-making developed two classes of models, the so called *unitary* and *collective* models, which differ in the way decisions are taken within the family. According to the former, the household can be treated as a single entity and all members are assumed to possess unified preferences. Therefore, different sources of income are pooled together within the households to model expenditure patterns. In the latter model, interests and the bargaining power may differ among members and the composition of household income is relevant in explaining expenditure decisions (Bourguignon and Chiappori, 1992; Browing *et al*, 1994). The validity of pooling income sources to explain

consumption patterns is assessed in Case and Deaton (1998), where the expenditure on different items, including schooling, is analyzed. The authors explore whether pension transfers in South Africa have different effects on behavior than other kinds of income. They find that there is no relevant distinction between spending from pension or other sources of income. Maitra and Ray (2003) use the same data set from South Africa, but they develop a complete system framework with budget shares, and account for possible sequentiality between pension income, remittances and other resource flows. Their finding is in contrast to Case and Deaton as they report that the Rands from transfers are not spent in the same way as the Rands from non-transfers. Rejection of the unitary models comes also from Lancaster et al. (2006) for India.

The way remittances are spent by migrant households has been extensively researched and a specific focus is devoted to analyzing the comparison between consumption behavior of migrant and non-migrant households. For example, Taylor and Mora (2006), applying a system of budget share equations for Mexico, report quite dissimilar consumption patterns not only among migrant and non-migrant families, but also among households with internal and international movers. Adams (2005), comparing the expenditure behavior of migrant and non-migrant households in Guatemala, reports that households receiving remittances spend much more on secondary education than do non-migrant families.

The effect of remittances on human capital has been investigated applying different methodologies, other than the Engel curve framework. Cox-Edwards and Ureta (2003) estimate the determinants of the hazard of dropping out of school, and they find that remittances reduce the hazard rate. Moreover, the effect of the transfers statistically differs from the effect of other income sources. This distinct effect of remittances may depend upon some types of conditionality made by the movers, who send remittances for the specific purpose of educating the younger family members. The education of the children, for example, can be analyzed according to an inter-temporal arrangement between movers and the family, in that migrants originally received education in order to move and gain urban wages. Remittances consequently represent the repayment for this investment and they are used by the family members to finance subsequent education of younger children (see Lucas, 1997).

The positive link between remittances and school enrolment is reported as well in Acosta (2006) for El Salvador. However, the effect vanishes after controlling for household wealth. Lopez et al. (2007) extend the analysis to 11 Latin American countries and find for 6 out of 11 nations a positive effect of migrant transfers on education attainment. Mansuri (2006) analyses whether children in migrant families in Pakistan display higher school attainments, expressed in terms of school enrolment rates, school dropout rates and accumulated years of schooling. He finds that

children in migrant households score better than their counterparts in non-migrant households in all three schooling outcomes. López-Córdova (2005) analyze the effect of remittances on school attendance among Mexican children aged between 6 and 14 years old. He reports that a one standard deviation increase in the proportion of recipient households is responsible for 3.3 percentage points increase in school attendance. Yang (2008) investigates the effect of exchange rate shocks, due to the Asian financial crisis, on child schooling in migrant households in Philippine. The hypothesis is that the shocks manifest themselves through changes in remittances. The author reports that the households experiencing more favorable exchange rate shocks adopt educational enhancement measures, which include an increase in educational expenditure or prolonged enrolment in school. Calero et al (2008) investigate the effect of remittances on the probability of being enrolled in school in Ecuador. They find a positive effect of remittances on school enrolment especially for girls, and children living in rural areas of Ecuador.

Conversely, McKenzie and Rapoport (2006) report a negative effect of migration on school attendance in Mexico applying a censored ordered probit model. The negative effect may arise because of parental absence which, due to migration, can reduce parental inputs into education acquisition, or it may induce the children to meet eventual labor and cash shortages through working and household activities. These effects more than compensate for the positive effect of remittances, which relieve family credit constraints.

3 The Albanian Education system

When Albania began its transition to a market economy, a reform of the education system was needed, to expand its long-term capacity to cope within a market environment and build a democratic system. During the past regime, the quality of education aimed at satisfying the productive needs of a planned economy and the ideological and social requests of a socialist state. The divergence in objectives with the new market system created great problems during the transition. However, rather than achieving a comprehensive restructuring, Albania introduced only partial reforms which - together with social unrest and the country's increasing fiscal pressures - worsened education in Albania.

Albania entered the transition with high levels of participation at all levels of education. During the communist regime the access to basic schooling was free and universal and the literacy was almost universal. Enrolment rates in basic and secondary education were generally higher than those in other planned economies in the region (World Bank, 2001). However, since the transition, gross enrolment rates have declined in all levels of education, except for secondary general. Not only have the enrolment rates sharply declined, but Albania has at present the lowest educational

attainment compared to most transition countries (World Bank, 2005)**.** A dramatic decline is associated in particular with the vocational enrolment rate.

To pinpoint the reason for such a declining trend, both demand and supply factors can be involved. The transition to a market economy is generally associated with increasing uncertainty about future jobs. This has widened the relative risk of return for a highly specialized education, such as vocational degrees and has dampened the expected return to vocational education. The perceived benefits of education, evaluated in terms of earnings or quality of jobs is low, and this undermines the long-term incentives for families to invest in education. Moreover, after transition, labour markets offered rising income opportunities, which increased the opportunity costs of staying at school.

An important supply factor explaining the decline in participation is represented by government spending on education. After transition, a significant decline in financial resources for education is registered, due to a general decline in national income, but also to a gradual fall in the share of national income spent on education. As a result, a chronic lack of resources has damaged the system and reduced the quality of education, devaluating the way education is perceived.

Teacher motivation and qualification is low as a consequence of low salaries and lack of training. The number of teachers with adequate education is decreasing, and a big proportion of teachers are under qualified. It is difficult to motivate properly qualified teachers to work in remote villages, as they often prefer to earn a better living in urban areas. Schools in rural areas are often obliged to employ teachers without a diploma. Teachers are poorly paid and therefore the incentive to remain in this profession is limited. Many teachers have left the education system for higher paying jobs and it is very hard to attract new teachers.

4 Description of the Data

The data employed for this study are extracted from the Albanian Living Standard Measurement Survey (ALSMS) conducted between April and September 2002. The ALSMS questionnaire contains general information at household and individual level, as well as information on household expenditure on several aggregate components. Data on private transfers received from abroad are collected. The education variable is of crucial relevance for this analysis. This is defined as the monthly total household payments related to pre-school and higher education. Education costs include school fees and tuition, textbooks, other schooling materials, uniforms, lodging, transport and gifts to teachers. In Albania, more than 98 percent of students go to public schools, implying that the variability of education spending is related to the quantity of education demanded by the

household, above the compulsory level. On the contrary, the quality of education should not affect the education expenses, given the limited enrolment in private schools.

Only 62 percent of total households, however, report positive spending on this item. There is thus a substantial censoring in the variable, which requires a specific econometric treatment. The censoring is more relevant for households in the bottom income quintile, as reported in Table 1, and it reduces with movement across the income distribution. The higher the income quintile, the higher the number of households that report a positive spending in this item. Wealth not only influences the incidence of the censoring but also the amount of education expenditure. At higher income quintiles, the spending on education rises. These last findings emphasize the critical role of the household budget constraint in determining education expenditure functions.

TABLE 1

The ALSMS also contains a migration module, which captures relevant information regarding the household migration experience. In particular, the data set offers detailed information on the amount of transfers received from abroad. Table 2 reports the incidence of households receiving remittances according to various income quintiles as well as the mean values of the transfers. Overall, 18 percent of the households receive transfers from abroad. The interesting feature is that the percentage of recipient families decreases at higher income quintiles, suggesting that migration in Albania is a phenomenon which involves poorer households. The greater proportion of remittance recipient households is found in the bottom quintile, with a percentage of 20.3. In contrast, among the richer families, only 15.2 percent receive remittances.

There is not a clear link between the amount of the transfers and the welfare position of the households, though richer families seem to receive larger external transfers than poorer ones. This may be due to the fact that richer households have better qualified migrants in terms of human capital and therefore these movers earn more and are able to send larger remittances.[1] This result is also consistent with better-off families having a larger number of movers. However, both hypotheses are speculative as there is no way to test either of them empirically given the available data.

TABLE 2

A preliminary inspection on the relationship between education expenditure and transfers in Table 3 shows the average education expenditure classified according to the households transfer regime. Non-recipient families consume considerably more than recipient ones in education goods. This first insight might suggest that transfers are targeted to a specific use, which does not involve education consumption. It is possible that migrants could have specified conditions on the type of spending (for example, for housing construction on behalf of the migrants themselves).

TABLE 3

This notion is corroborated by the fact that remittances are primarily sent to households for a specific reason. In 63 percent of the cases, remittances are targeted to a certain use, whereas in 37 percent there is not a specific motivation for the transfer. Among the most recurrent uses are purchase of food and basic necessity, investment in construction and medical expenses. The striking feature is that remittances are not sent for education purposes, as indicated by Table 4. This information however should be treated with caution as the spending purpose attached to remittances is gathered from the household respondent and not from the remittance-sender.

TABLE 4

5 Empirical analysis

The objective of this paper is to model an expenditure function on education. In doing so, I allow distinct types of income, namely private transfers and household income, to exert different impacts on education spending. This is done through separately entering these income sources in the education function, as suggested by the so called "collective" models of household decision-making. A form of heterogeneity in interests or bargaining power among different members within the households is allowed, such that the owner of the income may affect the pattern of consumption. Allowing movers' preferences to influence the aggregate household utility function, remittances can have a different allocation than other sources of income, due to the specific use attached by migrants to this form of transfer.

The educational expenditure is posited to be a function of the following set of variables:

$$e_i = f(Y_i, T_i, Z_i)$$

where e is schooling expenditure, Y is total household income excluding remittances, T represents transfers from abroad and Z is a vector of family and regional characteristics. In this regard, the inclusion of demographic characteristics captures the influences of spending habits and life-cycle effects. The differences in household size, age composition, educational level and other family characteristics are likely to affect expenditure patterns (Deaton and Muellbauer, 1980).

It should be noted that, compared to other studies, which situate their approach in a tighter theoretical framework, this analysis employs a more ad hoc structure to modeling a demand function. Although the use of budget shares, within a full system of equations, has been common in the empirical literature, this approach is not pursued here, as it is beyond the objective of the current research. A single item expenditure function is analyzed here and the total household expenditure on education is used as a dependent variable.[2] Moreover, a previous study (Castaldo and Reilly, 2007) estimated the expenditures on other categories within a traditional Engel curve framework,

using the same round of data. Little additional value-added would thus be gained from such an exercise in this paper.

5.1 Heckman two step estimation

In modeling the determinants of education expenditure, the censored nature of the dependent variable needs to be addressed. Over one-third of the households report zero purchases on this commodity and for this reason the application of OLS is likely to be inappropriate. One way to deal with this problem is to apply the two-step Heckman procedure (Heckman, 1979), which models sequentially a selection and a levels function.[3] To avoid identification purely on the basis of functional form, variables that influence the selection but not the levels equation are essential.[4]

In this analysis, the set of identifying instruments for the selection effects, used in the first stage probit equation, consists of four variables. Three of them serve as a proxy for local conditions, in that the variables population change, pre-school in community and connected to gas potentially capture the quality of the community environment in terms of providing access to utility facilities. Lack of access to these services may indicate a zone of low population density which implies a long distance to school. This in turn increases the cost of education and lowers the probability to attend it. This is implemented in line with Cox-Edwards and Ureta (2003). The fourth variable, which is the quadratic of one of the family composition variables, is more *ad hoc*, but appears to adequately perform the identification task.

The estimates of the levels equation are reported in Table 5. The estimated coefficients of the covariates have the expected signs and are generally well determined. The positive and statistically significant coefficient of total income highlights the important role that the budget constraint plays in a family's schooling decision. The coefficient indicates that a one percent increase in the monthly household income raises monthly expenditure in education by 0.1 percent, on average and *ceteris paribus*, suggesting a highly inelastic response of the demand for education with respect to household income. The literature has widely recognized the influence of income on schooling. For example, Behrman and Knowles (1999) find that the income elasticity of expenditure on education is 1.06. Sathar and Lloyd (1994) report a positive coefficient of household expenditure, expressed in deciles, on parental expenditures in primary schooling. In Cameron and Worswick (2001), permanent income has a positive and statistically significant effect on educational expenditure. Mauldin et al. (2001) indicate that an increase in after-tax income of 10'000 dollars rises educational expenditure by nine percent.

The number of young children, aged between 6 and 18, exerts a positive effect on education expenditure. The striking feature, however, is that the number of children below five years of age in

the household reduces the education spending, although this variable includes pre-school expenses. The magnitude of this effect is very modest, with an elasticity of 0.07. Cameron and Worswick (2001) find a similar result, with the number of children below five years of age reducing expenditure in education. Male headed households do not show a differentiated consumption pattern compared to female headed families. The age coefficients confirm that the life-cycle profile of earnings, proxied by the age of the head, influences consumption spending and it does so in a non-linear way, as suggested by the significant effect of the quadratic of this variable.

The education of the household head is extremely important in shaping the purchases of schooling goods and the effect is more pronounced at higher level of the head's education. This result is consistent with existing empirical findings, which highlight the critical role of parental education on children's schooling (Aslam and Kingdon, 2008; Himaz, 2008; Kingdon, 2005; Sathar and Lloyd, 1994). In Song et al. (2006) only mother's education raises the spending on schooling.

Access to schooling may be a problem in the rural areas, as suggested by the positive and statistically significant parameter of the urban variable. This corroborates the finding in Aslam and Kingdon (2008) and Mauldin et al (2001), where urban location is associated with higher education spending. This effect is a possible consequence of easier access to school. The inverse of the Mills ratio enters with a significant effect in the education equation. The positive estimated coefficient suggests that the unobservable influencing the probability of spending on education is positively correlated with the unobservable affecting the quantity of spending.

Finally, the transfer variable exerts a non-significant impact on education expenditure. This finding implies that incomes from different sources are not pooled together within the household, as the effect of remittances statistically differs from the effect of non-transfer income. This interpretation is consistent with the prediction of the non-unitary models, in that some family members may have distinct preferences and distinct bargaining power relative to other members, and therefore the resource allocation is not determined by the household as a unique entity. The ownership of the income may affect the pattern of its use. The interests of the movers sending remittances differ from the interest of the head of the household, and this yields a poorly determined effect of remittances on educational expenditures. Empirical support to the non-unitary models is as well provided in Lancaster et al. (2006) and Maitra and Ray (2003), where different income sources have a distinct impact on spending in various items. On the contrary, Case and Deaton (1998) find no distinct spending pattern out of different sources of income.

A second issue to investigate is why transfers do not influence education spending. One explanation could be that migrants impose conditions on the type of spending of remittances and this use does not include education. As it was already discussed, the transfers send home by

migrants are typically used to purchase food and basic necessities, for medical expenses, investment in construction and improvement of the quality of dwellings. A second interpretation could be that movers are the more able and the more educated children. Therefore, the ones left behind are the less able and thus unlikely to pursue a pathway that involves education and hence do not require remittance transfers for this particular purposes. Third, the returns to education in foreign markets, such as Italy and Greece, may be limited, and children in migrant families may find out-migration to be a better investment than education.

A fourth motivation can be gained by an inspection of the schooling situation in Albania. The country displays the lowest educational attainments compared to most transition countries. During the transition, enrolment rates in education declined in Albania, and this effect is eventually linked to a perceived low quality of education provision. The closure of most pre-schools and secondary vocational schools, inadequate public spending, deterioration of school infrastructure as well as lack of value placed on education are all factors responsible for the reduction in school quality (World Bank, 2005). The poor quality is also due to inefficiency in the allocation of resources available to schools, with high disparities in the distribution of teaching materials across schools, and to the low academic qualifications of a large proportion of the teachers (IMF, 2006). This situation influences the perceived benefits of education, in that the bad quality may lead to low returns to education and bad employment opportunities, undermining the incentive to invest in education in the first place. Therefore, migrant families allocate remittances to alternative investments, ensuring higher return than education.[5]

The actual finding is also in contrast with the empirical findings of Maitra and Ray (2003) and Yang (2008), who report a positive impact of remittances on educational expenditures. The existing empirical evidence on the effect of migration on human capital is quite mixed. In Calero et al. (2008), Cox-Edwards and Uretra (2003), Lopez et al. (2007), López-Córdova (2005) and Yang (2008), remittances are found to increase school attainments. In Mansuri (2006) migrant families, compared to the non-migrant counterpart, display higher school attainments for their children, while in Adams (2005) and Taylor and Mora (2006) migrant families have a much higher marginal budget share allocated to education. On the other hand, in Acosta (2006) remittances do not significantly enhance investment in human capital, while in McKenzie and Rapoport (2006) migration depresses educational attainment.

An econometric issue can provide a fifth motivation for the null effect of remittances, as far as the assumption of exogeneity of total household income and of remittances may be problematic in this context. To check for possible endogeneity bias, the two-step Heckman procedure is implemented through instrumenting the two potentially endogenous variables. In regard to total

income, the problem can arise for two distinct reasons. First, it may be that the unobservables that influence the education expenditure are correlated with those that affect total income. For example, a negative shock experienced by the household can alter both total income as well as the expenditure on education. If this is the case, the orthogonality relationship between total wealth and education purchases is not satisfied. Second, experience with household surveys has shown that the computation of household income can be inaccurate and imprecise and very often suffers from error. This measurement error can induce a non-zero correlation between the total income variable and the disturbance term in the education equation.

In regard to private transfers, similar arguments can be made. The decision to remit can reflect an inter-temporal arrangement between movers and the family. If remittances represent the repayment for a previous benefit received by migrants and they are used by the family to finance subsequent education of younger children (Lucas, 1997), the unobservable governing the decision to migrate and thus remit results in a correlation with the unobservable influencing the education expenditure, again inducing a problem of endogeneity similar to the one presented above. Measurement error can also affect the remittance variable, as households may misreport the exact amount of transfers received.

For total income the exclusion restriction is achieved through variables related to the dwelling condition and to durables, which capture the household's permanent wealth. This is done in agreement with Handa (1996). The variables are the presence of a bathroom in the house, the availability of a color TV, of a video player, of a camera and of a washing machine. These variables should be uncorrelated with the education spending decision, as even if the household head cares a lot about the education of the children, it is unlikely that this care is reflected by the purchases of such items. The provision of these items does not improve the schooling outcome of the children as it is more related to the leisure of the household.

For remittances, the exclusion restrictions are a variable capturing the presence of a post office in the commune of residence and a variable proxing for the economic conditions of the destination country of migration. It is well established that the amount of funds sent internationally by movers is influenced by the accessibility to channels of money transmission. The most popular channels in Albania are the post offices network and several specialized agencies, such as Western Union and Money Gram (Uruci and Gedeshi, 2003). The count of Western Union offices per province has been previously used in the literature as instruments for remittances (Amuedo-Dorantes and Pozo, 2006; Calero et al. 2008). Given that the ALSMS records the availability of a post office in the commune where the households live, this variable is used here, as it varies at the commune level.

A second source of exogeneity is exploited analyzing the source countries of the remittances. The total amount of remittances can be decomposed according to the place of origin of remittances, which are Greece, Italy, Germany, the US and Canada. It is plausible that countries such as Italy and Greece have different income regimes that the US and Canada, and the volume of remittances may account for such effect. Five constant variables, one for each origin country, are used to compute a weighted fixed effect for the source of remittances. The constants are defined according to the GDP per capita of the source countries of remittances. These variables are then multiplied by the relative amount of transfers sent from a specific country, to take account of multiple transfers originated in different locations.[6]

The five possible origin countries are indexed by $j \in \{1, 2, \ldots, J\}$. Let Transfers$_{ij}$ indicate the amount of remittances a household i receives from a particular country j. The fixed effect measure for household i becomes:

$$\text{Source}_i = \frac{\sum_{j=1}^{J} Transfers_{ij} * d_j}{\sum_{j=1}^{J} Tranfers_{ij}}$$

where $\mathbf{d_j}$ is the GDP per capita of source country j. If the household receives transfers only from country j, the variable associated with that household is simply the GDP per capita of the origin country. If the household has multiple origin countries for remittances, the variable becomes a weighted average of the origin country GDP, where the weights are the relative amount of remittances from that country.

Table 5 reports the result for the levels education equation along with the relevant tests for orthogonality, relevance of instruments and endogeneity. The Sargan test suggests that the instruments are jointly exogenous with respect to the education expenditure and the F-tests indicate that they are correlated with the endogenous variables. These tests give support to the overall validity of the instruments. Using the Wu-Hausman test, the exogeneity of the household income is rejected, while it cannot be rejected for international remittances.

The endogeneity of total income suggests that Albanian families are not able to protect the education expenditures from the effects of adverse shocks, which negatively impact on total income or alternatively that the variable total expenditure is affected by measurement errors. Apparently this is not the case for remittances.

The coefficient of total household income displays a certain increase compared with the IV estimation, supporting the evidence that the household income is endogenous. A shift is displayed as well by the coefficient of private transfer, which now turns marginally significant. This implies

that internationally remittances marginally increase the spending in education. The correction for endogeneity on the contrary does not alter the coefficients of the other covariates.

5.2 Semi-parametric sample selection

A concern when using the standard Heckman model is that this approach relies on a strong parametric assumption, requiring joint normality in the error terms in the level and the selection equations. This technique may be sensitive to the departure from the assumed parametric distribution as the estimates are rendered inconsistent if the normality assumption fails. To overcome this limitation, semi-parametric methods have been proposed. Newey (1999) suggests the combination of parametric and non-parametric functions, which are less sensitive to the violation of this assumption. A non-parametric approximation term, such as the power series, is used in place of the inverse of the Mills ratio in the second step equation to control for selection effects. A suitable approximating function is represented by the power series:

$$Z(\mathbf{z_i'\gamma}) = (\mathbf{z_i'\gamma})^{j-1}$$

where (.) contains the score index of the first step probit selection estimation. The order of the polynomial that enters in the estimation can be determined by goodness of fit measures. An efficient score test, suggested by Chesher and Irish (1987), is computed to assess whether the normality assumption required by the standard parametric procedure is upheld by the data. The test indicates a rejection of the assumed normality, suggesting use of the semi-parametric procedure described above.[7] Table 6 reports the estimated parameters. The reported statistics, such as the Akaike information criterion, the root mean squared error and the adjusted R-squared indicate that the polynomial of order two is the favored specification. The estimated coefficients are robust to the way the selection term is included as no significant differences result in the coefficients within the parametric and the semi-parametric two-steps approach. This is true for both the coefficients' size and for their statistical significance. For example, the semi-parametric approach confirms the magnitude of the coefficients for household income and international remittances, although the latter turned not statistically significant. This suggests that the violation of the parametric assumption exerts a limited impact on the estimated coefficients. Finally, the hypothesis of no sample selection is rejected in the semiparametric specification, using the Wald test.

TABLE 6

5.3 Quantile Regression Analysis

The relationship between education spending and the explanatory variables may change, depending on the portion of the distribution of the response variable that is examined. It may be the case that the elasticity of education expenditure with respect to specific continuous variables differs as one moves along the various percentiles of the conditional distribution of the education expenditure. The objective here is to test whether the households with low educational spending receive greater benefit from migrant remittances than high educational spending ones, as the former are likely, *ceteris paribus*, to be the poorest households and the most constrained in their budgets. Moreover, the income elasticity as upheld by the mean regression model cannot inform upon interesting issues. For example the families in the bottom education percentile may respond more than the top ones to changes in total income. To explore this issue, the education equation is estimated employing a quantile analysis (Koenker and Bassett, 1978).

The estimates are reported in Table 7. The quantile coefficient of household income is fairly constant across all points of the distribution. Interestingly, only the households in the bottom decile of the education distribution benefit from the international transfers. The quantile coefficient of remittances is positive and now statistically significant. However, the use of the inter-quantile regression model does not highlight a distinct effect of the coefficients along the various parts of the educational distribution.

TABLE 7

The inter-quantile regression model pinpoints additional interesting findings. First, the effect of the vocational and university variables is magnified moving from the lower to the upper deciles of the educational distribution. For low education spending, the vocational attainment of the head of the household displays a non-significant effect on the response variable, whereas this effect becomes significant in the median, 75th and 90th percentiles. The coefficients of the university variable are always statistically significant, but the magnitude of the coefficients increases for the top percentiles. This finding suggests that the education background of the head of the family is a major determinant of increasing spending in education. Second, the number of adults increases educational expenses, but only among those families drawn from the upper part of the education distribution. Third, the number of children aged between 6 and 18 years old increases education expenditure only for low education spending.

6 Summary and Conclusion

The primary objective of this work is to study the impact of international remittances on education expenditures. In doing so, the empirical work offers some insights on the "collective" models of household decision-making, which allows a form of heterogeneity in interests or in bargaining powers among different members within the households. To account for the censored nature of the education spending variable a generalized Tobit model is used in the estimation, employing both a parametric and semiparametric technique to address selection correction issues.

Some interesting results were obtained. First of all, all the methodologies overall provide compatible results, at least concerning the key variables of interest. As expected, household income has a positive and well determined impact on education expenditure, confirming the critical role of family budget constraints in explaining purchasing behavior.

A second important result is that the international transfers do not influence education spending. In almost all specifications the coefficient of remittances was statistically non-significant, while in one specification the coefficient was only marginally different from zero. This finding may suggest that movers have made conditions upon the use of remittances and the selected allocation does not include the education of children. It may be the case, for example, that the interest of movers does not match with the interest of the head of the household and this conflict produces the null effect of remittances on education expenditure. Moreover, the perceived rewards for education in the local market are low due to the poor quality of education provision, and this creates limited incentives for the investment in schooling. Low returns to education features as well in the foreign markets, such as in Italy and Greece. The income accruing from remittances may be channeled into alternative investments, such as purchases of new houses or quality enhancement of existing ones. The previous result is consistent with the predictions of the non-unitary models, as far as incomes from different sources, namely non-transfer and private transfer income, exert distinct effects on consumption.

A quantile analysis is performed and, among other issues, it shows that the household head education is more relevant for families in the upper part of the education expenditure distribution. On the contrary, the income variable exerts a stable effect along the conditional distribution. The international transfers increase education consumption only among the bottom deciles, although the.inter-quantile regression model is not able to capture a significant difference among the coefficients of the various percentiles.

Community level characteristics play a crucial role in shaping the effectiveness of migration. If migrant sending countries lack basic infrastructure, it is unlikely than remittances alone can produce any investment enhancing mechanism. Remittances are likely to widely impact on

development in those environments where migrants do not have to serve simultaneously as workers, savers, investors as well as producers. For this reason, improvement in school quality should be a primary target for Albania, so that migrant families can anticipate the future returns to education and higher incentives to invest in education are produced. If improvements in infrastructure and in service delivery are achieved in this field, remittances can eventually finance the increased demand in schooling.

Notes

1. Faini (2007) on the contrary contradicts this hypothesis, as he finds no evidence that more educated migrants remit more.

2. Among others, Case and Deaton (1998), Gitter and Barham (2008), Kooreman (2000), Moffitt (1989) and Song (2006) use single item expenditure functions.

3. An alternative methodology developed for censored dependent variables is represented by the Tobit model, which however suffers from a major drawback. The sign effects of the independent variables on the probability of being a non-censored observation and on the continuous outcomes are constrained to be the same. To test whether the data allows for such restriction, the Fin and Schmidt (1984) test is computed. The test rejects the restriction of the Tobit model in favour of a more flexible methodology, such as the two steps Heckman procedure.

4. To assess the validity of the identifying instruments, two tests are performed. On the one hand, the instruments are initially included in the primary equation and their significance is tested. The joint significance of these variables is then assessed in the probit equation. Table 5 reports the statistics of the tests. The tests suggest that these instruments influence the probability of consuming education without impacting on the levels function.

5. The reason for treating education both as an investment and as a commodity good depends on the specific nature of the variable. Even if education can be conceived as a commodity, which implies that education is consumed for the pleasure of knowing, this definition alone is not able to explain the existing evidence regarding the amount of education consumed. For example, tertiary education brings higher costs than secondary education without being associated with higher pleasure. This suggests that education should not be considered merely as a commodity but also as an investment good: in fact, people renounce to current income for higher income prospects in the future (Checchi, 2006).

6. Yang (2008) computes a similar measure, to link the appreciation of a migrant's currency against the Philippine peso due to the 1997 Asian financial crisis, with the increase in household remittances received from overseas.

7. The test value, distributed as Chi2(2) is 13.75.

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Appendix

Table A1. Sample statistics

Variable	Description	Mean	Std. Dev.
Education expenditure[1]	Monthly total household payments related to pre-school and higher education (Lek)	1000.39	2524.73
Total Household income	Monthly total household income (Lek)	223040	1712212
Age: up to 5	Number of children of age up to 5	0.43	0.69
Age: 6-18	Number of children of age included between 6 and 18	1.34	1.24
Age: 19-65	Number of adults of age included between 19 and 65	2.74	1.13
Male	=1 if household head is male; 0 otherwise	0.90	0.30
Age of head	Age years of household head	46.10	10.39
Age squared	Age of head squared	2233.23	965.21
Tirana	=1 if the household resides in Tirana; 0 otherwise	0.16	0.37
Central	=1 if the household resides in the Central area; 0 otherwise	0.28	0.45
Mountain	=1 if the household resides in the Mountain area; 0 otherwise	0.29	0.45
Coastal	=1 if the household resides in the Central area; 0 otherwise	0.27	0.45
Primary: < 4 grades	Head's highest educational level. =1 for no education or achieved four or less primary grades; 0 otherwise	0.09	0.29
Primary: < 8 grades	=1 between five and eight primary grades; 0 otherwise	0.41	0.49
Secondary	=1 for secondary level; 0 otherwise	0.16	0.37
Vocational	=1 for vocational level; 0 otherwise	0.21	0.41
University	=1 for educational level; 0 otherwise	0.13	0.33
Urban	=1 if the family resides in an urban settlement; 0 otherwise	0.55	0.50
Transfers from abroad[2]	Annual amount of transfers, in kind or in cash, received from family members migrated abroad (Lek)	33752.12	119564.00
Identification variables for probit selection equation			
Community Population change	=1 if community population increased; =2 if decreased; =3 if did not change	1.62	0.80
Pre-school in community	=1 there is a pre-school in the community; 0 otherwise	0.81	0.39
Connected to gas for heating	=1 if the household is connected to gas system; 0 otherwise	0.24	0.43
Age: 19-65 squared	Squared of variable age: 6-19	8.81	8.21
Instruments for total household expenditure			
Color TV	=1 if the household owns a color TV; 0 otherwise	0.88	0.33
Video player	=1 if the household owns a video player; 0 otherwise	0.24	0.43
Camera	=1 if the household owns a camera; 0 otherwise	0.02	0.14
Washing machine	=1 if the household owns a washing machine; 0 otherwise	0.54	0.50
Dwelling Bath	=1 if the dwelling has a separate bathroom; 0 otherwise	0.62	0.48
Instruments for private transfers			
Post Office	Number of post offices in commune of residence	1.34	0.47
Source of remittances	Weighted country fixed effect for the source of remittances	4743	10561

NOTE: [1]zero in 38 percent of the sample. [2] zero in 82 percent of the sample.

Table 1. Education expenditure according to income distribution

Quintile of household income	Expenditure in education	
	% of households with positive spending	Household monthly mean expenditure in education (Lek)
1	47.0	336.7
2	58.9	536.7
3	63.6	718.8
4	66.0	1230.8
5	72.1	2179.3
Total	61.5	1000.4

NOTE: the expenditure is nominal and expressed in local currency, Lek

Table 2. Households receiving transfers from abroad

Quintile of household income	Households receiving transfers from abroad	
	% of households receiving transfers	Mean annual transfer (Lek)
1	20.3	24076.2
2	20.3	28014.5
3	18.5	27682.6
4	19.8	46354.3
5	15.2	42621.2
Total	18.8	33752.1

Table 3. Education expenditure for remittances recipients and non-recipients

Household receiving:	Household monthly mean expenditure in education (Lek)
Non-Recipient Households	1040.6
International Remittances Recipient	837.7

Table 4. Main reason for remittance transfer

Main Reason	Households	Percent
Transfers sent with no specific reason	299	37.47
Transfers sent for:		
Purchase of food and basic necessities	284	35.59
Investment in Construction	82	10.28
Investment in HH enterprise	5	0.63
Purchase of a durable good	21	2.63
Educational expenses	3	0.38
Medical expenses	56	7.02
Wedding / funeral	24	3.01
Child support	6	0.75
Charity	6	0.75
Other	12	1.50

Table 5. Sample selection estimation: OLS and IV for endogenous income and transfers

	Heckman	IV-Heckman
	Dependent variable: ln (education expenditure)	
ln (household income)	0.079***	0.279***
	(0.013)	(0.043)
Ageup5	-0.155***	-0.155***
	(0.036)	(0.037)
Age6_18	0.181***	0.196***
	(0.034)	(0.037)
Age19_65	0.055**	0.028
	(0.025)	(0.029)
Male	-0.050	-0.116
	(0.084)	(0.096)
Age	0.102***	0.095***
	(0.025)	(0.029)
Age Squared	-0.001***	-0.001***
	(0.0003)	(0.0003)
Primary	0.104	0.076
	(0.093)	(0.098)
Secondary	0.441***	0.345***
	(0.105)	(0.110)
Vocational	0.519***	0.428***
	(0.100)	(0.096)
University	0.857***	0.723***
	(0.109)	(0.124)
Central	0.182***	0.178**
	(0.069)	(0.074)
Mountain	0.413***	0.536***
	(0.071)	(0.087)
Coastal	0.343***	0.313***
	(0.069)	(0.073)
Urban	0.278***	0.133**
	(0.049)	(0.059)
Transfers from abroad	0.0000003	0.000001*
	(0.0000002)	(0.0000004)
Mills	0.790**	0.243*
	(0.363)	(0.128)
Constant	2.048***	0.613
	(0.664)	(0.819)
N	1735	1735
R- squared	0.21	0.21
Instruments for selection		
Significance in levels equation	F(4,1714)=0.27 P-value: 0.90	Chi2(4)=5.07 P-value: 0.28
Significance in probit equation	Chi2(4)=27.00 P-value: 0.00	Chi2(4) =24.70 P-value: 0.00
Instruments for endogeneity		
Sargan test		Chi2(9)=12.00 P-value: 0.21
F-test in linear projection (ln HH income)		F(11,1708) =16.52
F-test in linear projection (Transfers)		F(11,1708)=52.05
Wu-Hausman Test:		
ln HH income		F(1,1716)=26.40 P-value: 0.00
Transfers		F(1,1716)=1.84 P-value= 0.18

NOTE: standard error (column two) and bootstrap standard errors (column three) in parenthesis. Bootstrap standard errors are performed on 200 replications. * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6. Semiparametric sample selection estimation, with endogenous income and transfers

	Dependent variable: ln (education expenditure)		
	Polynomial of order one	Polynomial of order two	Polynomial of order three
ln (HH income)	0.272***	0.246***	0.254***
	(0.045)	(0.047)	(0.041)
Ageup5	-0.153***	-0.147***	-0.148***
	(0.038)	(0.033)	(0.037)
Age6_18	0.177***	0.088**	0.117**
	(0.037)	(0.040)	(0.048)
Age19_65	0.029	0.032	0.030
	(0.029)	(0.027)	(0.029)
Male	-0.122	-0.107	-0.100
	(0.090)	(0.095)	(0.090)
Age	0.090***	0.087***	0.092***
	(0.029)	(0.024)	(0.025)
Age Squared	-0.009***	-0.001***	-0.001***
	(0.0003)	(0.0003)	(0.0003)
Primary	0.076	0.067	0.072
	(0.087)	(0.087)	(0.092)
Second	0.340***	0.319***	0.328***
	(0.109)	(0.098)	(0.108)
Vocational	0.424***	0.393***	0.403***
	(0.098)	(0.100)	(0.101)
University	0.715***	0.661***	0.683***
	(0.116)	(0.115)	(0.120)
Central	0.175**	0.165**	0.168**
	(0.079)	(0.075)	(0.075)
Mountain	0.535***	0.525***	0.527***
	(0.087)	(0.077)	(0.075)
Coastal	0.311***	0.315***	0.317***
	(0.074)	(0.073)	(0.072)
Urban	0.133**	0.132**	0.133**
	(0.058)	(0.055)	(0.060)
Transfers from abroad	0.000001*	0.000001	0.000001*
	(0.0000004)	(0.0000004)	(0.0000004)
Z1	-0.288	-2.504***	-4.733**
	(0.209)	(0.634)	(2.170)
Z2		1.944***	6.046
		(0.503)	(3.745)
Z3			-2.309
			(2.042)
Constant	1.140	2.061***	2.196***
	(0.742)	(0.704)	(0.831)
N	1735	1735	1735
		Cont.	

	Polynomial of order one	Cont. Polynomial of order two	Polynomial of order three
Adj R-squared	0.204	0.211	0.211
Root Mean SE	0.834	0.830	0.830
AIC	2.485	2.476	2.477
Wald (Zi=0)	Chi2(1)= 1.90 P-value: 0.17	Chi2(2)= 15.73 P-value: 0.00	Chi2(3)= 14.23 P-value: 0.003
Sargan	Chi2(9)= 11.39 P-value: 0.25	Chi2(9)= 9.60 P-value: 0.38	Chi2(9)= 10.37 P-value: 0.32
Wu-Hausman Test			
ln HH income	F(1,1716)= 24.80 P-val: 0.00	F(1,1715)= 18.95 P-val: 0.00	F(1,1714)= 19.90 P-value: 0.00
Transfers	F(1,1782)= 1.69 P-val: 0.19	F(1,1715)=0.92 P-val: 0.34	F(1,1714)= 1.05 P-value: 0.31

NOTE: Bootstrap standard errors, performed on 200 replications, are reported in parenthesis. * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7. Quantile estimation, corrected for sample selection and endogenous income

Dependent variable: ln (education expenditure)

Variables	2SLS	10	25	50	75	90	Interquintile
ln (HH Income)	0.241***	0.174***	0.194***	0.212***	0.274***	0.295***	0.122
	(0.041)	(0.039)	(0.053)	(0.041)	(0.057)	(0.090)	(0.089)
Ageup5	-0.149***	-0.169***	-0.099**	-0.084**	-0.127***	-0.175***	-0.006
	(0.036)	(0.055)	(0.041)	(0.035)	(0.047)	(0.068)	(0.073)
Age6_18	0.083**	0.184***	0.146***	0.095**	0.044	0.027	-0.157**
	(0.038)	(0.048)	(0.045)	(0.037)	(0.044)	(0.073)	(0.075)
Age19_65	0.034	-0.032	-0.011	0.011	0.008	0.133**	0.164***
	(0.027)	(0.028)	(0.036)	(0.025)	(0.056)	(0.057)	(0.058)
Male	-0.124*	0.044	-0.146	-0.151*	-0.136	-0.095	-0.139
	(0.075)	(0.102)	(0.089)	(0.083)	(0.122)	(0.185)	(0.212)
Age	0.085***	0.057**	0.057**	0.064***	0.073*	0.122**	0.065
	(0.026)	(0.026)	(0.024)	(0.024)	(0.039)	(0.052)	(0.055)
Age Squared	-0.001***	-0.001**	-0.001**	-0.001**	-0.001	-0.0011**	-0.001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.001)	(0.001)
Primary	0.067	0.030	-0.098	0.015	0.112	0.098	0.068
	(0.084)	(0.121)	(0.087)	(0.092)	(0.125)	(0.193)	(0.205)
Secondary	0.318***	0.168	0.041	0.145	0.422**	0.565**	0.397
	(0.095)	(0.139)	(0.099)	(0.106)	(0.173)	(0.226)	(0.255)
Vocational	0.391***	0.193	0.060	0.294***	0.530***	0.741***	0.548**
	(0.092)	(0.131)	(0.100)	(0.106)	(0.151)	(0.212)	(0.251)
University	0.657***	0.342**	0.221*	0.562***	0.955***	0.958***	0.616**
	(0.103)	(0.141)	(0.131)	(0.133)	(0.191)	(0.228)	(0.260)
Central	0.168**	0.165	0.076	0.131**	0.117	0.105	-0.060
	(0.079)	(0.101)	(0.076)	(0.065)	(0.129)	(0.182)	(0.195)
Mountain	0.525***	0.469***	0.356***	0.435***	0.447***	0.534**	0.065
	(0.089)	(0.099)	(0.080)	(0.067)	(0.131)	(0.209)	(0.215)
Coastal	0.319***	0.265***	0.181**	0.303***	0.280**	0.161	-0.104
	(0.076)	(0.098)	(0.073)	(0.064)	(0.134)	(0.161)	(0.186)
Urban	0.132**	0.133**	0.198***	0.125**	-0.0002	0.149	0.016
	(0.054)	(0.062)	(0.062)	(0.056)	(0.081)	(0.105)	(0.126)

Cont.

				Cont.			
	2SLS	10	25	50	75	90	Interquantile (10-90)
Transfers from abroad	0.0000003*	0.0000003***	0.0000002	-0.0000001	0.00000043	0.0000004	0.0000001
	(0.0000002)	(0.0000001)	(0.0000002)	(0.0000003)	(0.0000003)	(0.000001)	(0.000001)
Z1	-2.501***	-1.489*	-2.673***	-2.493***	-2.465***	-3.460**	-1.970
	(0.691)	(0.826)	(0.853)	(0.619)	(0.931)	(1.652)	(1.661)
Z2	1.963***	0.929	2.136***	2.149***	2.005***	2.471*	1.542
	(0.563)	(0.639)	(0.678)	(0.512)	(0.766)	(1.286)	(1.289)
Constant	2.159***	2.657***	3.241***	2.935***	2.577**	1.814	-0.844
	(0.739)	(0.714)	(0.857)	(0.696)	(1.127)	(1.519)	(1.575)
N	1735	1735	1735	1735	1735	1735	1735
Adjusted R2	0.211						
Pseudo R2		0.103	0.129	0.127	0.135	0.176	

NOTE: Bootstrap standard errors, performed on 200 replications, are reported in parenthesis. * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

NOTE DI LAVORO PUBLISHED IN 2010