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Migration and Educational Aspirations – Another Channel of Brain Gain?

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Abstract:

International migration not only enables individuals to earn higher wages but also exposes them to new environments. The norms and values experienced at the destination country could change the behavior of the migrant but also of family members left behind. In this paper we argue that a brain gain could take place due to a change in educational aspirations of caregivers in migrant households. Using unique survey data from Moldova, we find that international migration raises parental aspirations in households located at the lower end of the human capital distribution. The identification of these effects relies on GDP growth shocks in the destination countries and migration networks. We conclude that aspirations are a highly relevant determinant of intergenerational human capital transfer and that even temporary international migration can shift human capital formation to a higher steady state by inducing higher educational aspirations of caregivers.

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I.   Introduction

The nexus between international migration and human capital remains a disputed topic. At the individual level the positive effect remittances can have by relaxing liquidity constraints and thus by enabling educational investments are often cited and widely acknowledged. However, at the aggregate level especially the outflow of skilled migrants – what has been termed brain drain – has been characterized as detrimental to sustainable growth of developing countries. Only recently this perspective has been challenged by various authors (e.g. Stark et al. 1997, Beine et al. 2001) who show theoretically that the option to migrate could actually increase human capital investments by individuals. Their argument is rooted in a neo-classical framework emphasizing that the incentive to invest is driven by the possible monetary gains from going abroad. Since not all individuals who invest in education to migrate actually leave the country, a net increase of the human capital stock in the sending countries takes place. This hypothesis has been supported empirically by recent macro studies (e.g. Beine et al. 2007). Only few studies have attempted to test the human capital externalities of migration empirically at the household level. Batista et al. (2012) constitute a notable exception. The authors present evidence for the case of Cape Verde that cannot reject the brain gain hypothesis.

In this paper we suggest a brain gain effect through a different causal channel and test it empirically. We argue that individuals and households do not maximize their utility independent of their environment and social context but that their decisions to e.g. invest in education are bound to the goals and aspirations set by their environments. This approach was suggested recently by Ray (2006) who pointed out that aspirations are an important determinant of behavior and could represent a key element of economic development. In line with this perspective we test the hypothesis that individuals adapt their aspirations if exposed to new environments. We exploit the variation of norms and values international migrants are exposed to in order to find out if migration has positive or negative human capital externalities by changing the educational aspirations of households.

In our empirical analysis of household data from Moldova we find a strong relationship between enrollment, schooling expenditures and the educational aspiration caregivers have for their children, which supports the importance of aspirations for the analysis of household behavior. More importantly, using a 2SLS approach to address the endogeneity of migration, we find a positive short-run impact of international migration on educational aspirations. These

results provide a new perspective on the ongoing discussion about human capital externalities of migration and a possible brain gain. We thereby contribute to the growing literature about the effects of migration on households in the sending countries with an emphasis on human capital accumulation. By focusing on aspirations, our analysis is also related to the nascent discussion about the transfer of norms and values in the context of international migration.

The paper proceeds as follows. In the next section we review the literature on aspirations and human capital investment and describe the role of migration in this context in depth. In section III we formulate a simple conceptual framework. We introduce the data used for the empirical analysis in section IV and describe the econometric strategy in section V. We present the descriptives and estimation results in section VI and VII, respectively, and conclude in section VIII.

II.   Previous Literature

Because the concept of aspirations is a social construct it lends itself to a variety of definitions. Broadly defined aspirations can be understood as a desire to achieve a certain objective. Aspirations differ from expectations in that they often represent ideals or higher values. Expectations on the other hand account for constraints and perceived limitations. Accordingly we will use the term aspirations to describe goals that one would like to achieve in an ideal world without constraints and with full information and expectations as probabilistic goals that one expects to achieve taking into consideration all limitations one faces.

In economics the idea of aspirations has been latently present for quite some time. Questioning classical economic theory and utility maximization, Herbert Simon (1959:263) noted "[…] the conditions for satisfying a drive are not necessarily fixed, but may be specified by an aspiration level that itself adjusts upward or downward on the basis of experience". When Kahneman and Tversky (1984) speak of the importance of reference points for utility maximization they reconcile ordinal utility theory with the observation that judgment and evaluations are based on prior experiences. Broadly speaking reference points are one major determinant of the goals people aspire to achieve.

The connection between human capital accumulation and aspirations has recently gained more attention and has been used to model inequality and poverty persistence. Dalton et al.

(2010) show formally that aspirations can serve as a behavioral explanation of poverty persistence. Their model establishes a theoretical link between constraints that are internal to the economic agent and persistent poverty. They define aspirations as a reference point and consider effort to be complementary to this reference point. The authors argue that an initially low reference point raises the likelihood of a persistent and binding internal constraint leading to a poverty trap. Dalton et al. (2010) use these results as a normative justification for empowerment programs that increase individuals' aspirations. Mookherjee et al. (2010) analyze the effect of social context and parental aspirations as determinants of investments in children's education. At the core of their model stands the assumption that parental pride in their children's achievements is on the one hand determined by the economic situation of their neighbors and does on the other hand determine their investment behavior. They conclude that spatial segregation and the implicit limitation of the aspiration window can lead to persistent inequalities.

There is also a growing body of empirical evidence on the role of aspirations in the context of economic development that speaks to the relevance of the topic. Analyzing the nexus between aspirations and poverty Bernard et al. (2011) apply the theoretical framework proposed by Ray (2006) to households in Ethiopia. The authors argue that self-efficacy is an important determinant of goal content and pursuit and use a locus of control measure to proxy aspirations. The locus of control is a concept referring to the degree to which individuals believe they can influence important events in their lives. They find that the locus of control and the aspirations gap are strongly related and that the locus of control plays a central role in the credit demand of households.

Apart from establishing that some kind of low aspiration equilibrium might be present, the central question is why these low aspirations prevail and how they can be changed. Various authors have proposed that aspirations could be influenced by the exposure to new role models. Chiapa et al. (2010) exploit data from the Mexican anti-poverty program Progresa and find that children that were randomly exposed to highly educated staff such as doctors and nurses had significantly higher educational aspirations. Another study that focused on the importance of role models is Beaman et al. (2012). The authors provide strong evidence from a randomized natural experiment in India where female community leadership inspired girls' educational attainment. Macours and Vakis (2009) also use the random variation of female leadership in communities in Nicaragua to identify the effect of role models on human capital and educational aspirations. The authors show that changing aspirations brought about by new role models can have significant

impacts on the investment behavior of households. An example for a direct intervention is presented by Krishnan and Krutikova (2010). The authors evaluate a NGO-program that attempts to raise the self-esteem and aspirations of children in slums of Bombay. They find that the program increases the aspiration window measured by the number of people children could name who are wealthier and serve as role models.

These studies suggest that aspirations are responsive to changes in the environment and can be modified. Yet, they cannot overcome two problems. First, the authors often do not distinguish between aspirations and information. In a situation of incomplete information it is impossible to disentangle the information and aspiration effect. A pure aspiration effect must be understood as goal setting under perfect information. Second, it must be noted that ambitious goals or high expectations do not translate with certainty into high educational achievements. Alexander et al. (1994) have shown that children from less advantaged background are less likely to convert their educational aspirations into the desired educational achievement. However, there is no doubt that with low aspirations high educational achievements are more unlikely.

While the importance of aspirations for human capital formation is well established, there is no consensus as to whether the externalities of international migration are positive or negative for children's education. While migration can improve the financial situation of the household through remittances, thereby alleviating the resource constraint of the household, it can also negatively affect the intra-household time allocation. Kandel and Kao (2001) find positive effects of parental migration on children's school performance in Mexico. They attribute their finding to the improved financial situation of migrant families but also argue that parental migration changes the motivation of children to attain a good education. Mansuri (2006) presents evidence for Pakistan that points in the same direction. While migration eases the resource constraint and has positive effects on human capital accumulation in general, the prospect of migration does not alter schooling decisions. In contrast to these two contributions, Antman (2011) finds that paternal migration from Mexico to the U.S results in a reduction of time allocated to studies and an increased work load of children. Her estimates suggest that these negative short-term effects are driven primarily by boys in the age range of 12 to 15. Similar results are presented by McKenzie and Rapoport (2006) who also observe that migration seems to depress educational attainment of children. Additionally they show that the reduction in schooling is accounted for by the increased propensity of migration for boys and an increased household workload for girls.

There are various other factors that will moderate the effects of migration on educational investments apart from the additional financial resources obtained via remittances. First, the permanent absence of one parent and the resulting lack of guidance and encouragement could have adverse effects on the educational attainment of children. This is especially important since the parental nurture effect is one of the main drivers of intergenerational human capital transfer (Holmlund et al. 2011) and might not be compensated by the increased income (Shea 2000).

Second, migrants are exposed to new environments and ideas which can lead to an adjustment of their pre-migration priors. This migration induced transmission of knowledge, norms and values has been demonstrated to affect the up-take of low-fertility norms (Beine et al. 2009) but also the political realm (Spillimbergo 2009). For the case of Moldova empirical evidence by Mahmoud et al. (2012) suggests a strong link between the political atmosphere in the migration receiving country and the subsequent voting behavior of migrant households in the sending country. More precisely, westward migration seems to reduce the electoral support for the far left of the political spectrum in Moldova.

Third, migration itself could become a viable option for the children who see their parents work abroad and thus affect educational attainment. Jensen (2012) has demonstrated that individuals adjust their behavior quite quickly to new job market opportunities. Using data from a randomized labor market intervention in India he shows that young women increase their schooling investments and postpone marriage when given the opportunity of non-farm employment. That migration has a similarly strong but qualitatively different effect on life-cycle planning of households has been proposed by Kandel and Massey (2002). They argue that migration becomes part of the household's life plan in the migrant sending countries. They find that the prospect of migration to the U.S. shapes children's behavior in Mexico by increasing the likelihood of migrating to the U.S. and by lowering their odds of continuing with school. Thus, low aspirations of children could be the result of their perception that education is not necessary to migrate, i.e. an underestimation of the return on investments in education that is induced by the exposure to an apparently "easy" exit. In line with this argument McKenzie et al. (2012) present evidence from Tonga that there is a systematic bias in the expected wage differential. The authors attribute this bias to underreporting of earnings by current migrants to moderate demands for remittances, and to disproportionate emphasis potential migrants put on negative migration experiences reported by other people. An alternative explanation could be the employment of their highly educated migrant parents in low skill jobs. Returns to foreign

education are often low (e.g. Hartog and Zorlu 2009, Sanromá et al. 2009) and could therefore discourage parents and children who plan to migrate to adjust their aspirations upwards.

There are only two papers we are aware of that have focused on the relationship of educational aspirations and migration. In a sample of Mexican students Dreby and Stutz (2012) detect a positive impact of maternal migration on educational aspirations while the migration of fathers leaves the aspirations children have unchanged. Opposed to this finding, Kandel and Kao (2001) report lower educational aspirations at all academic levels of Mexican children growing up in households with international migrants. Unfortunately both papers do not account for the self-selection of migrants and can therefore not establish the causal link between migration and educational aspirations convincingly. Our own analysis makes a contribution to the literature by carefully identifying causality (see Section V).

III.   Conceptual Framework

Most models that are concerned with the effect of migration on human capital investments and a possible brain gain are built on the premise that wage differentials are the main determinant of migration (e.g. Stark et al. 1997, Mountford 1997, Vidal 1998, Beine et al. 2001). A problem with this setup is that it does not account for the intrinsic value of education. The present framework intends to clarify the relationship between aspirations and human capital investments. To allow an accessible interpretation of and direct predictions from our framework we keep matters as parsimonious as possible.   We employ a simple static model with no general equilibrium effects based on Stark et al. (1997) to show that the exclusion of the intrinsic value of human capital can lead to underestimating the effects of migration on human capital investments. Our approach proceeds in three steps looking at investments (1) under autarky, (2) with migration and (3) with dynastic migration. Our framework suggests that increased human capital investments might prevail after the migration option has ceased to be available in a dynastic human capital investment scenario.

Assume individuals live for two periods, childhood and working age. Individuals derive utility from consumption c_t in both periods and from the intrinsic value of human capital θ in the first period in each dynasty d. In the first period individuals can invest in human capital θ or work to finance consumption c_1. In the second period individuals can only work to finance consumption c_2. Their objective function is given by:

$$U_d \equiv U(c_1, \psi(\theta), c_2) \tag{1}$$

Consumption is financed only by wages. Individuals can earn wage $W^H(\theta)$ in their home country. Labor demand and the wage function are exogenously determined and identical for all individuals. To keep matters simple we assume a linear wage function such that $W^H(\theta) = w_0^H + w_1^H \theta$ where w_1^H is the education premium which is time invariant. Individuals face an exponentially increasing human capital cost function $C(\theta) = \gamma \theta^2$ were $\gamma > 1$. Human capital is aquired instantly in the home country in period one and remains unchanged in period two. For ease of exposition we impose no restrictions on the total amount of human capital that can be accumulated. Also there is no capital market. The individual faces the following resource constraints in the first and second period, respectively:

$$c_1 = W^H(\theta) - C(\theta) = w_0^H + w_1^H \theta - \gamma \theta^2 \tag{2}$$

$$c_2 = W^H(\theta) = w_0^H + w_1^H \theta \tag{3}$$

In addition to these standard elements we introduce a reference point dependent disutility following the discussion by Kogszegi and Rabin (2006), which is represented by $\psi(\theta)$. The individual will choose the education of a certain reference group θ^R that acts as a benchmark to evaluate her own household's education level.[1] This reference point or aspiration level of education will most likely be influenced by the environment the individual is exposed to, e.g. family, neighborhood, coworkers. This relates to the results by Mookherjee et al. (2010) who have argued that spatial segregation will lead to persistent reference points, i.e. aspirations traps. The individual will aspire to this reference point and experience increasing disutility the farther away she is from this benchmark. Let $\psi(\theta) = (\theta^R - \theta)^2$. It is reasonable to assume that individuals mostly aspire to higher goals and therefore - if available - choose a higher reference group than their current educational level such that $\theta^R \geq \theta$.

Before introducing migration, let us consider the optimal human capital investment in autarky. By substitution we find that the individual will maximize the following objective function:

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[1] One possible way of describing the evolution of θ^R could be $\theta^R = \sum_{k=1}^{N} \frac{\theta_k}{N}$ were N represents the total number of families in the neighborhood.

$$U_d \equiv U(c_1, \psi(\theta), c_2) = w_0^H + w_1^H \theta - \gamma \theta^2 - (\theta^R - \theta)^2 + w_0^H + w_1^H \theta \qquad (4)$$

Solving for θ we observe that the optimal autarky level of human capital θ^* is:

$$\theta^* = \frac{w_1^H + \theta^R}{\gamma + 1} \qquad (5)$$

In autarky human capital accumulation will be driven by the education premium w_1^H, by the reference level θ^R, and by the cost of education γ. Now we allow for the possiblity to migrate temporarily in the second period to work abroad. Assume that the probability to migrate p is exogenous and applies equally to all individuals. In the foreign country individuals can earn a wage $W^F(\theta)$ where $W^F(\theta) = w_0^F + w_1^F \theta$. Let the education premium in the foreign country be bigger than the education premium in the home country, i.e. $w_1^F > w_1^H$. Migration will be costly such that migrants will earn $\kappa W^F(\theta)$ in the foreign country were $0 < \kappa \leq 1$ is a cost factor. The resource constraint in the second period will therefore take the following form:

$$c_2 = p\kappa W^F(\theta) + (1-p)W^H(\theta) = p\kappa[w_0^F + w_1^F \theta] + (1-p)[w_0^H + w_1^H \theta] \qquad (6)$$

By substituting the second period consumption of equation (6) into equation (4) the objective function reads:

$$U(c_1, \psi(\theta), c_2) = w_0^H + w_1^H \theta - \gamma \theta^2 - (\theta^R - \theta)^2 + p\kappa[w_0^F + w_1^F \theta] + (1-p)[w_0^H + w_1^H \theta] \qquad (7)$$

The optimal level of human capital θ^* given the probability to migrate p thus becomes:

$$\theta^* = \frac{2(w_1^H + \theta^R) + p(\kappa w_1^F - w_1^H)}{2(\gamma + 1)} \qquad (8)$$

Notice that the only difference between equations (5) and (8) is that the latter contains the probability weighted wage difference term $(\kappa w_1^F - w_1^H)$. It is readily observable that a higher probability to migrate and/or a higher wage differential will increase the investments in education in the first period. Given that migrants are only temporarily permitted to work abroad each generation faces the same decision.

In a dynastic migration setting the implications of the reference point θ^R become even more pronounced. Let the migration of the last generation only have an effect on two variables: the migration cost κ and the reference point θ^R. To emphasize the intergenerational transmission of these two variables we will use the subscript d.

First, migration might decrease the migration cost. This effect reflects the strong evidence regarding the importance of migrations networks (e.g. Munshi 2003). By introducing the indicator variable $m_d = \{0,1\}$ - where $m_{d-1} = 1$ if the last dynasty migrated and zero if not - we can write $\kappa_d = \kappa_{d-1} + \alpha(1 - \kappa_{d-1})m_{d-1}$. Alpha ($\alpha$) is a deterministic indicator reflecting how much the migration experience reduces migration costs and is defined as $0 < \alpha < 1$. Thus, if the probability of migration is non-zero ($p > 0$) and the last generation also migrated ($m_{d-1} = 1$) we would observe increased human capital investment compared to a scenario where there is no connection between dynasties.

Second, the migration in the last generation could also raise the reference point the dynasty uses. This change could come about through either externalities in the labor market in the destination country due to the matching of the migrant with a certain sector or other market interactions, or through externalities in social surroundings, i.e. interactions with coworkers, friends or neighbors. Let λ represent the difference between the home and the foreign reference group such that $\lambda = \theta^{R_F} - \theta^{R_H} \geq 0$. We can think of the link of the reference point between dynasties as:

$$\theta_d^R = \theta_{d-1}^R + \lambda m_{d-1} \tag{9}$$

If the last generation has migrated ($m_{d-1} = 1$) and the migrants adopted a higher reference point ($\lambda > 0$) then the aspired level of education θ_d^R will increase compared to migration without dynasties. It is important to note that in absence of the possibility to migrate or a positive wage differential for the second dynasty, migration could induce higher human capital investments.

The two questions we will address primarily in the empirical analysis are (a) whether the reference point matters for human capital investment, i.e. whether θ^* really depends on θ^R and (b) whether migration through λ really affects θ_d^R. We will also briefly look at the migration aspirations caregivers have for their children. High migration aspirations of caregivers could be a

indication of lower migration costs (κ_d), i.e. parents will try to facilitate and support the migration of their children by providing information and guidance.

IV.   Data

To investigate the role and evolution of aspirations empirically we employ a unique household survey dataset that was collected in Moldova between October 2011 and February 2012. Moldova is an excellent environment to study the effects of migration on aspirations and education. After Moldova emerged from the Soviet Union it faced the transition problems also observed in other post-soviet countries. High unemployment and a stagnant economy in the late 1990s led to increasing emigration of Moldovans. Thus international migration is a relatively new socio-economic phenomenon in Moldova. However, only few states worldwide have a higher net migration rate than Moldova, among them Samoa and Tonga.[2] This is also reflected in the high volume of official remittances which is about 24% of the Moldovan GDP.

We conducted a survey to understand the effects of migration on "Children and Elderly Left Behind" (CELB). The survey was built as a national representative survey of households with children, elderly people and migrants using the National Labor Force Survey (LFS) as sampling frame. In line with the LFS the survey is a stratified random sample of 3539 households in 129 communities.[3] The questionnaire consisted of four modules. The first module elicited basic household characteristics including the household composition, labor market activity and income. It also contained an extensive section on the international migration of household members. This migrant section allowed us to capture in detail the migration history of each household member since 1999. Based on this first module, caregivers of all children, children in the age range of 10 to 18 and all elderly people in the household were identified. In a second module all caregivers were interviewed about topics such as health, education and behavior of their children. We interviewed caregivers of 3594 children in 2082 different households. In a separate third module 1282 children between the age of 10 and 18 were interviewed concerning similar topics. Due to the structure of our sampling strategy we only cover cases in which migrants have left Moldova at some stage during the last 12 months while their child stayed behind.[4]   Additionally, we

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[2] Comparisons are made based on data in 2010 from World Development Indicators compiled by the World Bank.
[3] Since the LFS does not include Transnistria our sample is limited to households that are located in the West of the River Dniester.
[4] Migration is defined as being abroad for at least 3 months during the last 12 months.

conducted a community questionnaire collecting information on general aspects such as education, health, infrastructure and labor markets in each community.

Central for our analysis are the questions we asked the caregiver. Two specific questions focused on the aspirations and expectations caregivers had for their children. First we asked caregivers the following question:

(1) *"Imagine finances were not a problem and everything else went right, what is the highest level of formal education you WISH [CHILD] could complete?"*

As noted before the literature often does not go into detail when defining what constitutes aspirations: a change in the information set available or a change in the utility maximization reference point under perfect information. Since Moldova has very good media coverage as well as free education, we believe that our results capture a pure aspiration effect under perfect information.

For the level of formal education we used a scale that resembles the International Standard Classification of Education (ISCED) designed by the UNESCO. In the following analysis we converted this ordinal classification of educational attainment into years of schooling. In addition to these absolute aspirations we also elicited the level of expectations. This is important for two reasons. First it is a forward looking measure that characterizes and refines the parental mind set. Secondly it allows us to contrast the novel notion of aspirations with the traditional expectations and investigate possible differences and similarities. We asked caregivers the following question to measure their expectations:

(2) *"Consider your current financial situation and the child's prospects. Using this card on which 0 means impossible and 10 is certain, how likely is it that [CHILD] will complete this level of education?"*

This question aims at capturing the probabilistic expectations of parents. We choose this approach in line with the recommendations by Delavande et al. (2011) and Attanasio (2009). More specifically we presented the respondent the stylized image of a ladder with 10 steps, explained the concept of probability and made clear that the last step represents certain achievement of a set goal.

To corroborate the parental aspirations we also asked children about their aspirations in separate interviews. The correlation between the two is 0.98, which suggests that the intergenerational transmission of aspirations is very strong. In the following we will concentrate on parental aspirations for two reasons. First, it is contested whether educational plans can actually be interpreted as long-term goals. For example Alexander and Cook (1979) showed that the mere expression of intent by children can be quite volatile over time. Second, parents do control the financial resources of the household. Their decisions will therefore have a larger impact on the allocation of resources as compared to the aspirations of children.

To validate our aspiration measures we also included questions to measure the locus of control as done by Coleman and de Leire (2003) and Bernard et al. (2011). In our data this personality measure is as expected positively correlated with aspirations and expectations but has no significantly predictive value for aspirations or expectations after controlling for household and child characteristics. Cebi (2007) for example finds no effect of locus of control on human capital investments in the form of high school graduation. She underscores the assertion that the locus of control merely proxies the unobserved ability of children. To use the locus of control approach for our research would require us to neglect these conceptual difficulties and would force us to assume that locus of control and aspirations can be equated, which excludes the possibility to evaluate the difference between idealistic goals (aspirations) and realistic expectations. For these reasons we will refrain from using the locus of control measure in the subsequent analysis.

For our analysis we define aspirations as the unconstrained goal parents set for their children (i.e. question 1) and expectations as the product of the aspired years of education (question 1) and the expected probability of achieving this goal (question 2).

To evaluate how migration as an alternative to local employment is transmitted between generations we also included one question about migration aspirations in the questionnaire of the caregivers. We asked them:

(3) *Do you think it would be good for [CHILD] to live or work in a different country when [CHILD] finishes his/her formal education?*

About one in five of the caregivers answered this question affirmatively; they were also asked about the reason for giving this answer, which country they would their children like to go to and whether formal education was important to work in the particular destination country. The two main reasons they stated were the absence of job opportunities in Moldova and a better way of life abroad. Family reunions were only mentioned by roughly 2 percent of the caregivers as a reason. In line with the two major migration corridors of Moldova about 41 percent of the caregivers named Russia as the most preferable destination followed by 20 percent who wanted their children to go to Italy. Irrespective of the destination there was a broad consensus regarding the importance of formal education: 96 percent of the caregivers said that it would be an important requisite to work in the destination country.

V.   Empirical Identification Strategy

Our goal is to find out if, as assumed in the conceptual framework, a causal relationship between migration and aspirations exists. The parsimonious structural equation we will use to test the hypothesis of Eq. (9) is:

$$\theta_{ij} = \alpha + \lambda M_{ij} + X'_{ij}\beta + \varepsilon_{ij} \tag{a}$$

In this baseline specification θ_{ij} is the observed aspiration, X_{ij} a vector of individual characteristics of the child i in household j and M_{ij} is the observed migration status of the household the child is living in. While we will concentrate primarily on educational aspirations, as suggested by our framework, we will also include expectations and migration aspirations in our analysis. The former will allow us to examine whether the concepts of aspirations and expectations differ. The latter enables us to test the presence of chain migration dynamics.

Since none of our dependent variables is independent of migration (M_{ij}) we cannot expect that $E(\varepsilon_{ij}|M_{ij}) = 0$. Suppose we observe a household were two parents raise two children. We observe that one parent migrates to Italy and that the remaining caregiver has high educational aspirations for her children. The couple could have had high aspirations for their children before one of them migrated and choose to work abroad to overcome the credit constraints to fulfill these aspirations. They could also be very ambitious in general which let them choose the migration strategy but is reflected by high aspirations independently of this migration decision. Thus, because migrants are not randomly drawn from the population, OLS estimates could be severely

upward biased if positive self-selection is present. However, if negative self-selection is the dominant migration pattern the OLS estimates could also underestimate the effect migration has on aspirations. To address this problem we employ an exogenous variable (Z) as an instrument for the migration status in a two-stage least squares (2SLS) setup. The structural equation of our first stage is then:

$$M_{ij} = \alpha + \phi Z_{ij} + X'_{ij}\beta + \zeta_{ij} \qquad\qquad (b)$$

Following McKenzie and Rapoport (2007) and Antman (2011) we use as an instrumental variable the GDP per capita growth rate in each of the destination countries between 2004 and 2010 weighted by the size of the migrant network proxied by the number of migrants from the community who had migrated to the destination country by 2004. The instrument is based on the assumption the that higher GDP per capita growth the more likely are migrants to find employment and the higher are the wages, i.e. we emphasize the pull effects of economic growth at the destination. While there is no doubt that the change in GDP growth is completely exogenous to the conditions and characteristics of the household in Moldova it seems necessary to adjust the strength of this pull effect by the size of the migrant network at the time of the change. We regard the migration network as the information channel through which the exogenous shock operates. Migration networks proxied by current migrant stocks have also been used in a number of studies to capture the migration cost decreasing effect networks have as they improve the chances of employment and finding housing at the destination. Using the World Development Indicator data base we found that GDP per capita (in constant 2005 international $) grew on average 2.9% per annum in the 90 countries the index is built from. The most prevalent migration destinations in 2004 were Russia, Italy, Romania, Ukraine and Portugal which consequently weight most heavily in the index. These five countries had an average growth rate of GDP per capita of 2.6% between 2004 and 20010. Our identifying assumption is that changes in economic growth represented by GDP per capita in the destination countries, weighted by the strength by which communities in Moldova were connected to these countries through migration networks in 2004, are predictive of current migration rates and only have an impact on current enrollment and educational aspirations through migration.

In the context of Moldova there is – in addition to the issue of self-selection – the question of sorting. There are two major migration corridors that lead to the West, mainly Italy, due to lingual proximity of Romanian and Italian, and to the East, mainly Russia due to historic ties. Yet,

it is not possible to use the GDP variation to estimate the effect of migration to one specific country since this instrument only represents an overall pull effect. Thus, we cannot disentangle the effect of going to Russia compared to migrating to Italy using only the GDP per capita growth rate. Nevertheless this difference is of crucial importance since Russia alone absorbs around 60% of Moldovan migrants in our sample. We therefore employ an additional second instrument: the presence of Soviet military personnel in each community before 1990. The assumption behind this binary variable is that the allocation of Soviet military in Moldova was independent of household characteristics and regional differences but that it was rather driven by strategic factors. Because Moldova as part of the Soviet Union constituted one of the border countries with the West it was considered strategically important. Additionally, because of the small size of Moldova Soviet military personnel was present in many communities. In about one quarter of the communities in our sample community leaders told us that Russian military personal was living or working in the community before 1990. The assumptions this instrument is based on are similar to those described in the case of migration networks. Since soldiers became part of the local social network we expect their presence to decrease the migration cost to Russia for people living in these communities. Thus the presence of Russian military personnel before 1990 should only boost migration to Russia but have no effect on migration to the West.

One threat to the validity of our instruments is the recent emergence of the migration networks. Since migration in Moldova only took off in the late 1990s we use relatively recent migration stocks as a proxy for the evolving networks. This bears the risk that our instruments do not only capture the network effect but also the current economic conditions of the region. We therefore include regional fixed effects and various household control variables. To ensure that we only capture the migration effects for one migration spell independent of the migration history we also tested the robustness of our findings by including a dummy variable that indicates if the household had migrants before 2011. This dummy did not alter our results qualitatively. A second problem is the non-linearity of the effects migration has on the households in the sending country. More specifically, parents would have to spend a longer time at the destination to update their priors about education, i.e. to decrease or increase their aspirations. Also from a financial perspective, migrants who leave the country for the first time will have to bear more costs than regular migrants which will decrease the amount of money remitted to their families. The observed effects of recent migration can therefore be understood as the lower bound of the overall effect migration has.

VI. Descriptives

Table 1 reports the basic summary statistics. On average the household size is 4.9 and 2.1 children live in each household (see column 2). Out of all households with children 28% had a member who lived or worked abroad for at least 3 months in 2011. About one third of the migrants go to countries in Western Europe and two thirds migrate to the East, i.e. almost exclusively Russia (see column 4). On average about 60% of the migrants that leave for Western destinations are female. By contrast, migrants to the East are predominantly male (74%). We also observe a convergence of migrant skill levels for eastward and westward migrants (see Graph 1), which suggests that the positive selection of migrants who go to the West seems to have decreased since 1999. Migrants are on average 34 years old and have 11.12 years of education at the mean. About 63% of all migrants are married. It is mostly the husbands who leave their wife and children behind. However an increasing feminization of migration seems to take place as also women migrate in increasing numbers, mostly to the West.

Nearly half the migrants were unemployed before they left for the first time and most of them worked in agriculture and construction. Roughly 84% of the migrants come back at least once a year or go back and forth on a regular basis. While abroad, 85% communicate with household members at least once a week or more often. Thus, the connection between migrants and those left behind is by all means quite close. On average 63 percent of the migrants have a work permit for the destination country. In the destination countries the migrants work mostly in the construction sector or have individual household employers, i.e. sectors that are likely to have a low education premium. The remittances generated by these migrants make up about 46% of the total household income of migrant households in Moldova. This also explains the significant difference between total income of migrant and non-migrant households.[5]

Caregivers are predominantly the biological parents of the children (87%). However, about 10% of the children live in so called gap-household structures where both biological parents have migrated and grandparents have taken on the role of caregivers. On average caregivers are 38 years old and have 11 years of schooling (see Panel B in Table 1). The significant difference in age of about two years between migrant and non-migrant caregivers is attributable to the gap-households. There is no significant difference in the average years of schooling between

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[5] Total income comprises the personal income of all household members from compensation for labor, pensions, social insurance benefits, remittances and other transfers as well as the income of the household as a whole from the sale of agricultural production and livestock and social security benefits.

caregivers in migrant and non-migrant households. We also looked at the education of migrants and caregivers and could not find any significant difference.

Caregivers would like their children to complete on average 15.4 years of schooling (see Panel B in Table 1). When taking into consideration the constraints they face they expect their children to complete around 11.5 years of schooling which equals upper secondary. These means conceal that aspirations are actually concentrated around tertiary education (see Graph 2). Caregivers desire in 53.15 percent of the cases a first stage tertiary degree for their children. Note that very few households in the total sample stated second tertiary education as their aspiration. Caregivers expect that their children will reach the set educational goal on average with a probability of 74.2 percent. When asked what the main reason for not reaching the set goal was, 9 out of 10 caregivers cited financial constraints. Caregivers in migrant households expect their children to complete a significantly higher number of years of formal education. This is confirmed by the visual comparison of the distribution of expectations of migrant and non-migrant households in Graph 3. Caregivers in migrant households tend to have a more optimistic attitude towards the realization of the educational aspirations of their children. However, the enrollment rates of children in all cohorts are almost indistinguishable based on simple means testing (see Panel C in Table 1). The median expenditure per child is around 6% of the total household income.[6]

When asked about migration aspirations 20% of the caregivers stated that it would be good for their children to work or live abroad (see Panel B in Table 1). Since we also asked the 10-18 year olds we were able to compare their answers with the point of view of their caregivers. The transmission of migration aspirations between children and parents is quite strong. After controlling for various individual and household characteristics we found that children were 53.5% more likely to state that they would like to migrate if their caregiver also told us so.

VII. Estimation Results

Clearly, putting aspirations at the center of an economic analysis is only justified if it affects behavior. Before turning to the relationship of migration and aspirations, we therefore test this hypothesis by analyzing the correlations of aspirations and enrollment as well as the monetary

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[6] Schooling expenditure per child comprises expenditures on schooling materials such as textbooks and uniforms as well as additional gifts to school teachers, transportation expenditures and the cost of supplemental tutoring.

expenditure of households for schooling. Because education is compulsory for 9 years from age 7 to 16 in Moldova we concentrate on the narrow age range of 16-18 which captures enrollment in the upper secondary level which is not compulsory since this education permits access to higher education. Unfortunately we cannot investigate the effects of aspirations on higher education directly since we only have cross-sectional data for children up to the age of 18 due to the structure of the survey.

Table 2 contains the results of the estimations concerning the effect of aspirations on enrollment (columns 1-4). A one year increase in aspirations is associated with a 2.4 percent higher probability of being enrolled in the age range of 16-18. Our expectations measure has a quantitatively less important impact on enrollment but is also significant at the one percent level while the aspiration to migrate has no effect on the enrollment of children aged 16-18. Two observations warrant attention. First, the education of the caregiver has a significantly positive effect on enrollment. Second, aspirations are not fully independent of caregiver education. Since the effect of aspirations on enrollment works slightly at the expense of other variables such as caregiver education, marital status and socio-economic status of parents we have to conclude that they are to some extent a mediator of parental education. On the other hand if they were a mere representation of parental education we should not observe any significant effect of parental education on educational investments after introducing the aspiration measure. To evaluate the robustness of our continuous aspiration and expectation variables we also included a dummy variable which equals unity if parents have educational aspirations lower than secondary education. Again this aspiration failure has throughout a significantly negative impact on enrollment rates (not reported in Table 2). Based on these results we therefore conclude that aspirations are partly independent of parental characteristics in the context of enrollment.

Our OLS estimates of the effect of aspirations on expenditure on schooling are displayed in columns 5-8 of Table 2. Again both aspirations and expectations matter greatly for the investment in the education of children. A one year increase in aspirations yields an average increase in schooling expenditure of about 7 percent per child per year. We also observe that migration aspirations have a significantly positive effect on schooling expenditures. If parents favor the future migration of their children the education expenditure increases by 10.6 percent over a baseline of mean effects of 3162 Moldovan Leu per child per year.

Overall, this evidence highlights the importance of aspirations and expectations for the extensive and intensive margin of human capital accumulation. We can therefore not reject the hypothesis of the conceptual framework that θ^R increases human capital investments.

In Table 3 we report the OLS estimation results concerning the association between migration, aspirations and expectations. Throughout all specifications migration is associated with significantly higher levels of aspirations and expectations (see columns 1-6). We employ two different measures of migration experience. The first variable captures if any migration has taken place in a household since 1999, which is when large scale migration from Moldova to other countries started. We introduce this variable to find out whether accumulated migration experience is a confounding factor. The reason is that first time migration is likely to be more costly then repeated migration and first time migration could also be insufficient to alter the migrant's stance on education. Thus someone with 10 years of migration experience will make different contributions to the household than someone who left the country recently for the first time. Since we do not observe significant differences between the accumulated migration experience since 1999 and the current migration in 2011 we do not have to be overly concerned about the non-linearity of migration effects. In columns 6-9 we also relate the household's migration status to the migration aspirations the caregivers have for their children. Here we observe that only in households with a long migration history caregivers seem to favor the migration of their children. This could be due to the before mentioned nonlinearity of migration effects.

Because estimating the causal effect of migration on an observable outcome is often problematic due to endogeneity we resort to an instrumental variable strategy as outlined before. Using the conventional Wu-Hausman F and the Durbin-Wu-Hausman Chi² test (not reported) we have to accept the null that migration is an endogenous regressor. Table 4 shows the effects of our instruments in the first stage. As expected the average GDP growth in the destination countries between 2004 and 2010 increases the propensity to migrate in communities which have networks with these countries. A one unit increase of the growth in all destinations weighted by the stock of migrants in each destination increases the probability to migrate by 3.5-5% (see columns 1 and 4). This effect is statistically significant and robust over all specifications except for migration to the East. We also observe a clear specialization of networks; communities that had migrants in Italy in 2004 are less likely to witness migration to the East in 2011 while households in communities with strong migratory ties to the East in 2004 are less likely to

migrate to the West in 2011. It is important to note that the former presence of Russian military personnel in the community increases the likelihood of migrating in 2011 to Russia by around 4.2% but has no effect on migration to the West. This allows us to instrument not only the migration decision of households but also the self-sorting of migrants into Eastern and Western countries. Under our identification assumption, the strong effect of the exogenous GDP growth at the destination and the quasi-random presence of Russian military personnel in the community on migration allow us to test the causal effect of migration on aspirations.

The corresponding IV estimates of migration effects are reported in Table 5. In column 1 the coefficient of migration is positive and statistically significant which points to a strong effect of migration on the educational aspirations of caregivers. Since the level of aspirations is capped at the post tertiary education the migration experience cannot shift the aspirations any further than 22 years of education. Hence the effect of migration should be stronger for households with a low human capital endowment. In column (2) we interact our instrument with a dummy variable (LEduc) if the caregiver has less than 11 years of education. The threshold of 11 years represents the mean level of education of caregivers. We observe that the migration of household members in households with poorly educated caregivers has a significantly positive effect on the educational aspirations of caregivers while the overall effect of migration becomes indistinguishable from zero. One possible interpretation of this finding is that highly educated households already have aspirations for their children that are at the high end of our aspiration scale. Thus the migration experience cannot shift the aspirations any further up. On the other hand they also do not seem to decrease their aspirations. If highly educated migrants were not able to generate a wage premium from their education during their stay abroad they might be induced to consider education for their children as futile and reduce their aspirations. This is not the case. When we split the effect of migration by destination we see that the sign for eastward migration is positive and significant at the 5% level, while the sign for westward migration is positive but statistically insignificant (see column 3). This also reflects the negative selection of eastward migrants. In conclusion, households with a small endowment of human capital have a tendency to adjust the educational aspirations caregivers have for their children upwards due to the migration experience of the household members. Evoking the notation of the framework this analysis is based on, we cannot reject the hypothesis that migration changes the aspiration of the household, i.e. $\lambda > 0$, which translates into an increase in θ_d^R.

Columns 4-6 of Table 5 contain the effect of migration on expectations. Our results indicate that caregivers become more confident about the educational attainment of their children. This may reflect the relaxation of the resource constraint of migrant households as a result of receiving remittances. Direct schooling cost and foregone earnings of the child due to continuing education appear less problematic which allows caregivers to be more optimistic and to expect higher educational attainment. It is interesting that only caregivers in households with migrants in the West have more positive expectations whereas living in a household with migrants in the East has no effect on the expectations of caregivers at any conventional significance level. We believe that this result reflects the different returns to migration. Westward migrants sent on average 16% more remittances than migrants in the East. This interpretation is in line with the hypothesis that the expectations are strongly driven by the resource constraint of the household. The strong difference between the effect of migration on educational aspirations and expectations also underline the different implications of these closely related measures.

Contrary to the OLS results regarding the effects of migration on migration aspirations (see Table 3) we find a significant increase in migration aspirations of caregivers living in households with migrants. The linear probability estimates in columns 7 to 9 of Table 5 suggest an increase in the likelihood of favoring the migration of their children. In the context of our conceptual framework we cannot reject the hypothesis that migration networks (κ_d) show self-reinforcing dynamics by transmitting preferences for migration to the next generation of the household. This observation supports what has been called chain migration.

At the bottom of Table 5 we also report the results of two tests to evaluate the validity and strength of our instruments. First, the results for the Hanson J reported in the last row of Table 5 cannot reject the null that the excluded instruments are valid with one exception. Second, we use the Cragg-Donald F-statistic of the first-stage estimations to check the relevance of our instruments. We report these F-statistics and conclude based on a comparison with the reference values for weak instruments presented by Stock and Yogo (2002) that our instruments will allow us to infer the effect of migration on aspirations and expectations. However, we have to be cautious with the interpretation of our results regarding the effect of migration on migration aspirations due to possibly weak instruments.

While both our OLS and 2SLS estimates point to the economically significant effects of migration we have to note the considerable differences in estimated coefficients. As noted before

one explanation for the higher coefficients of the instrumented estimation effects compared to OLS could be negative self-selection of migrants. Yet, since from our descriptive statistics no clear picture regarding self-selection emerges we think a more plausible explanation for the higher 2SLS coefficients is the heterogeneity of the treatment effects. Our 2SLS estimates only represent a local average treatment effect since we cannot be sure that those responsive to our instrumentation, i.e. the GDP per capita growth at the destination, are representative of the overall population (see Angrist et al. 1996). Using a threshold of 0.5 our first stage correctly predicts 75% of the cases. The households which do not respond to the exogenous variation in GDP at the destinations but still migrate are concentrated in the north of the country and are mostly located at the border with the Ukraine or Romania. Migrants in these households are more likely to go to the East than those who comply with the variation of our instrument. However, these correlations do not reveal possible differences in unobservable characteristics such as the motivation to migrate and we are not able to identify the true subpopulation of compliers. We hypothesize that the non-compliers leave out of economic necessity, irrespective of the change of the situation at the destination, and do not consider the migration option as an opportunity. This pressure could lead them to reject the norms at the destination and thereby leave aspirations unaffected. Those who respond to the improving situation at the destination reflected by the change in GDP might be able to choose migration as a superior income source and are more receptive to influences at the destination.

We have to acknowledge several potential caveats when interpreting our findings. As noted before it is difficult to disentangle the information and aspiration effect of migration. We believe our results reflect a pure aspiration effect, i.e. that migration changes the goal setting of households under full information for two reasons: First, 91.6% of the households in our sample have a television and about one third of the households have a computer, i.e. people have the means to access information. Second, and more importantly, if migration was only an information channel previous village migration would have made pure information available before 2011. Since our estimations control for the migration stock in 2004 the access to information e.g. about available education premia abroad would have already been supplied by these migrant networks.

Another drawback of our analysis is that we cannot observe the effect of remittances directly. This means that we cannot eliminate the possibility that the additional financial resources are responsible for the change in aspirations. Although we explicitly included a condition of

"unlimited resources" in the question for aspirations, we cannot be sure that this phrasing was enough to visualize this situation. While this income effect is a serious issue our results suggest that it rather affects expectations than aspirations. If the observed effect was driven only by the decreased liquidity constraints due to remittances the effect of aspirations and expectations should show no differences. Yet, by comparing column 3 and 6 in Table 5 it becomes clear that migration to the East and to the West have significantly different effects on aspirations and expectations. While eastward migration changes aspirations, it has no effect on expectations. On the other hand westward migration has a strong impact only on expectations. We would argue that this difference reflects the different amounts of remittances received, with migrants in the west sending significantly more money, which allows households with migrants in the West to be more confident about the educational achievements of their children.

Finally, the interpretation of our results with respect to a possible "Brain Gain" requires two qualifications. First, the the cross-sectional nature of our data set does not allow us to observe the realization of the educational aspirations that constitute the core of our argument. Second, it must be acknowledged that the brain gain will only take place if not all children in migrant households leave the country, after realizing more education. In this respect we rely on the same assumption as contributions that argue in favor of the monetary incentive effects.

VIII. Concluding Remarks

In this paper we have argued that international migration affects human capital accumulation apart from relaxing the resource constraints of households through a change in the educational aspirations caregivers have for their children in the migrant sending households. By using a unique household survey dataset we were able to test this hypothesis. The different lines of evidence we have presented converge on the conclusion that parental migration can change the educational trajectory of children in migrant households with low human capital endowment through an upward adjustment of educational aspirations. This suggests that migrants update their priors about the importance of education while abroad and transmit them to the caregivers of children in the sending country. Since we tested our hypothesis of the relationship between aspirations and migration in a country with high enrollment rates and a generally high level of formal education our results must be interpreted as the lower bound of the effect migration can have on aspirations.

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Overall, these findings suggest a new channel of brain gain as a result of international migration. While the current models are based on the premise that human capital investments will be increased by the opportunity to migrate we suggest that an increase in human capital could also be triggered by the positive externality migration has on educational aspirations. Our results imply that even a temporary migration spell could induce increased human capital investments. Thus, a brain gain could even take place if parents had the chance to migrate while children do not have this opportunity.

Our results are also highly policy relevant in a broader context. Important determinants of human capital accumulation such as parental education are quite inflexible whereas aspirations react quite flexibly to new impulses. If intergenerational human capital transfer is regulated strongly by the aspiration levels of parents, public policy could increase overall human capital accumulation by implementing measures that shift the educational aspirations parents have for their children upwards. Such a policy would not only counter inequality but could also be more cost-effective than other policy measures since supply-side interventions in the education sector will have a low return on investment without the necessary demand for education; more schools will not lead to an increased human capital stock without high educational aspiration of parents and children.

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Annex

Table 1: Descriptive Statistics

		(1)	(2)	(3)	(4)	(5)
				mean		
		N	all	non-migrant (N=2584)	migrant (N=1014)	p-value [diff (3)-(4)]
Panel A						
Households	Household size	3598	4.89	4.81	5.1	0.00
	Number of Children	3598	2.12	2.16	2.01	0.00
	Migrant household	3598	.28	-	1	-
	West Migrant	3598	.10	-	.35	-
	East Migrant	3598	.19	-	.68	-
	HH Income in US$	3201	3588.27	3180.77	4622.09	0.00
	Remittances as share of Income	3201	.13	-	.46	-
	Educ. expenditure as share of Income	3201	.20	.22	.15	0.00
	Below Poverty Line (2 Int. $)	3201	.03	.03	.02	.02
	Urban (yes=1)	3598	.23	.26	.16	0.00
Panel B						
Caregiver	Age of Caregiver	3337	38.15	37.61	39.52	0.00
	Gender of Caregiver (male =1)	3337	.10	.08	.16	0.00
	Education in years	3333	11.01	11.03	10.95	.43
	Educ. Aspirations in years	2860	15.41	15.36	15.53	.09
	Educ. Expectations in years	2777	11.53	11.36	11.98	0.00
	Migration Aspirations (yes=1)	3598	.20	.19	.21	.16
Panel C						
Children	Age	3598	9.84	9.75	10.05	.15
	Gender (male=1)	3598	.51	.52	.51	.62
	Enrolled (10 - 18 years)	1918	.90	.91	.88	.07
	Enrolled (10 - 15 years)	1166	.98	.99	.98	.32
	Enrolled (16 - 18 years)	752	.76	.77	.76	.77

Note: Authors calculation based on households with children in CELB 2012. Answers "Don't know" and "Refused to answer" excluded.

Graph 1: Self-Selection and the Education of Migrants

Source: Calclulations based on CELB 2012
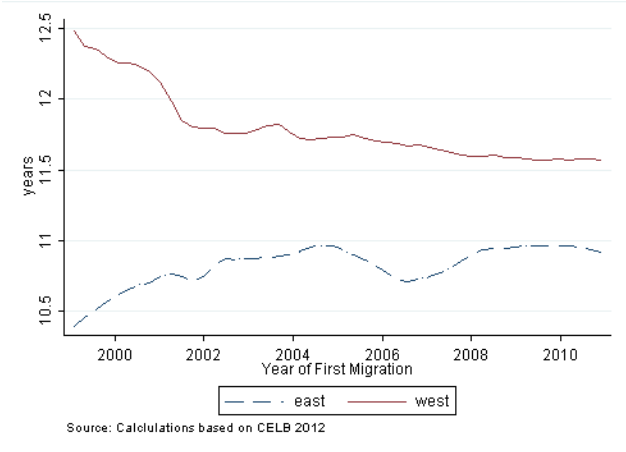
Graph 2: Distribution of Aspirations by Migration Status

Source: Calclulations based on CELB 2012
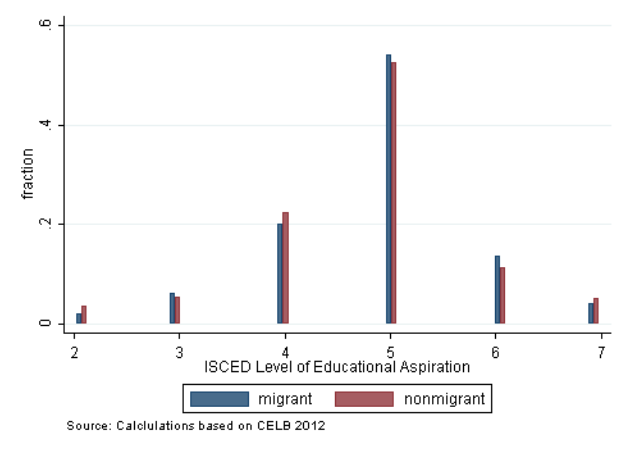
Graph 3: Distribution of Expectations by Migration Status

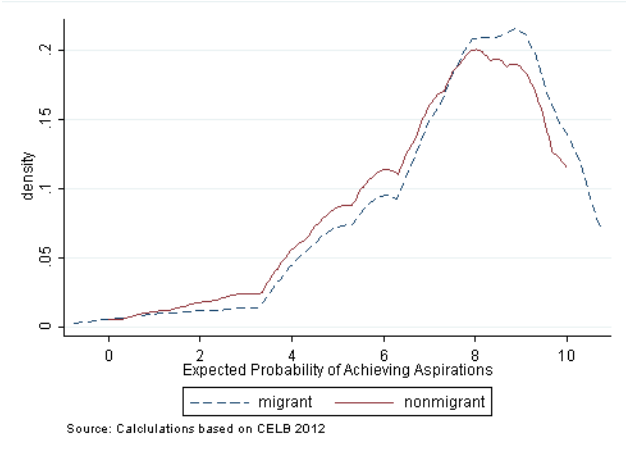Source: Calclulations based on CELB 2012

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Table 2: Effect of Aspirations on Enrollment (age 16-18) and Schooling Expenditure

	enrollment 16-18 - logit				schooling expenditure – OLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ed. Aspirations in years	0.60***				272.38***			
	(0.10)				(42.95)			
Ed. Expectations in years		0.57***				154.93***		
		(0.09)				(34.65)		
Mig. Aspirations (yes=1)			-0.21					333.68*
			(0.37)					(178.81)
Age of Child in years	-0.85***	-0.85***	-0.81***	-0.85***	311.43***	291.45***	280.76***	312.14***
	(0.18)	(0.20)	(0.27)	(0.18)	(35.81)	(38.02)	(39.33)	(35.87)
Gender of Child (male=1)	-0.74**	-0.30	-1.10**	-0.74**	-129.04	55.89	-3.42	-135.19
	(0.35)	(0.44)	(0.48)	(0.35)	(117.53)	(141.68)	(134.40)	(116.77)
Education of Caregiver in years	0.35***	0.23**	0.17	0.34***	118.54***	64.40	66.43	118.66***
	(0.09)	(0.11)	(0.11)	(0.09)	(42.77)	(47.15)	(49.55)	(42.91)
Other children (yes=1)	-0.11	-0.34	-0.59	-0.11	-266.21	-72.70	-117.90	-256.85
	(0.36)	(0.47)	(0.55)	(0.37)	(169.87)	(182.38)	(183.54)	(167.89)
Absolute Poverty (yes=1)	-1.83***	-1.48**	-1.31	-1.84***	-1,164.30***	-650.89	-762.09*	-1,160.79***
	(0.60)	(0.59)	(0.91)	(0.61)	(401.21)	(428.73)	(447.82)	(399.79)
Obs	472	406	467	472	1828	1685	1655	1828
Adj. R²					0.22	0.25	0.24	0.22
McFadden's R²	0.26	0.36	0.51	0.26				
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Authors calculation based on households with children in CELB 2012. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Controlling also for child health, school distance, subjective school quality, relationship with caregiver, marital status of parents, orphan and semi-orphan, ethnicity, household composition; Standard errors clustered at the household level. Grade level fixed effects included.

Table 3: The Effect of Migration (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Educational Aspirations			Expectations			Migration Aspirations		
Migration Total since 1999	0.38**			0.47**			0.27*		
	(0.17)			(0.21)			(0.14)		
Migration Total in 2011			0.44**			0.42**			0.05
			(0.17)			(0.18)			(0.17)
Age of Child in years	0.03	0.03	0.03	0.11***	0.10***	0.11***	0.06***	0.05***	0.06***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)
Gender of Child (male=1)	-0.78***	-0.77***	-0.77***	-1.05***	-1.04***	-1.04***	0.15	0.15	0.15
	(0.10)	(0.10)	(0.10)	(0.14)	(0.14)	(0.14)	(0.12)	(0.12)	(0.12)
Education of Caregiver	0.22***	0.22***	0.22***	0.41***	0.40***	0.41***	0.00	-0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)
Other children (yes=1)	-0.34**	-0.31**	-0.30**	-0.10	-0.07	-0.07	-0.21*	-0.19*	-0.20*
	(0.14)	(0.14)	(0.14)	(0.16)	(0.15)	(0.15)	(0.11)	(0.11)	(0.11)
Absolute Poverty (yes=1)	-1.04**	-0.99*	-1.04**	-0.96*	-0.90*	-0.97*	-0.14	-0.08	-0.14
	(0.52)	(0.52)	(0.51)	(0.51)	(0.52)	(0.51)	(0.49)	(0.50)	(0.49)
Obs	1685	1685	1685	1655	1655	1655	1964	1964	1964
McFadden's R²	0.25	0.25	0.25	0.27	0.27	0.27	0.08	0.08	0.08
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Authors calculation based on households with children in CELB 2012. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Controlling also for child health, school distance, subjective school quality, relationship with caregiver, marital status of parents, orphan and semi-orphan, ethnicity, household composition; Standard errors clustered at the household level. Grade level fixed effects included for educational Aspirations and Expectations.

Table 4: First Stage - The Migration Decision (Logit)

	(1)	(2)	(3)	(4)	(5)	(6)
	Current migrant 2011					
	All	West	East	All	West	East
GDPpc Growth 2004	0.25***	0.48***	-0.04	0.35***	0.50***	0.07
	(0.09)	(0.11)	(0.12)	(0.09)	(0.12)	(0.12)
Migrant Stock in Italy 2004	-0.00	0.00	-0.02***	-0.01*	0.00	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Migrant Stock in Russia 2004	-0.01	-0.04***	0.02*	-0.02**	-0.04***	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Military Base				0.35***	0.21	0.42**
				(0.13)	(0.19)	(0.17)
Age Household Head	-0.02***	-0.00	-0.02***	-0.02***	-0.00	-0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Education Household Head	0.05***	0.12***	-0.01	0.05***	0.12***	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Household Size	0.38***	0.29***	0.34***	0.40***	0.30***	0.34***
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)
Obs	2989	2989	2989	2437	2437	2437
McFadden R²	0.14	0.10	0.15	0.15	0.12	0.15
Wald Chi²	618.6	240.8	517.3	450.5	233.8	350.6

Notes: Authors calculation based on all households in CELB 2012. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Controlling also for migration stocks in Romania and Ukraine and gender of household head. Standard errors clustered at the household level. Regional fixed effects included.

Table 5: The Effect of Migration (2SLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Educational Aspirations			Expectations			Migration Aspirations		
Mig_2011	3.24**	0.74		3.77**	2.68		0.40*	0.76***	
	(1.64)	(2.05)		(1.73)	(2.02)		(0.21)	(0.25)	
Mig_2011*LEduc		4.70*			0.85			-0.68	
		(2.42)			(3.06)			(0.49)	
Mig_2011 West			1.98			6.62**			0.32
			(2.01)			(2.98)			(0.25)
Mig_2011 East			4.75**			0.78			0.57
			(2.24)			(2.31)			(0.36)
Obs	2503	2503	2503	2435	2435	2435	2926	2926	2926
F-Statistic	20.18	18.05	15.91	21.77	23.69	18.01	7.472	5.691	6.388
CDW F-Statistic	15.63	8.550	11.74	16.32	9.188	13.57	10.20	4.389	7.681
Hanson J-Statistic	0.177	0.479	-	0.097	0.194	-	0.430	0.197	-

Notes: Authors calculation based on households with children in CELB 2012. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Controlling also for age and gender of child, caregiver and household characteristics, migration stocks in Italy, Russia, Ukraine and Romania. Standard errors clustered at the household level; Instruments are GDP per capita growth (2004-2010) and migration stocks (2004) in destination countries. Regional fixed effects included.