

## Brain Drain or Brain”Retain”? Students’ Intention to Migrate in Albania

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**Abstract:** This paper investigates the determinants of international migration of the Albanian university graduates. The evidence is drawn from a new survey designed to study the micro and macro-economic determinants of the brain drain. The sample consists of 1210 last year students of 14 public and private universities in 8 major cities of Albania. The survey asked detailed questions on intentions to migrate and return on a range of different push and pull factors and their importance. These factors include individual and family characteristics, migration experiences and networks, destination countries, as well as aims, incentives and barriers to international migration at the micro and macro level. Using these data, the probability of international migration of the most educated individuals in our country was estimated and the main characteristics that predict migration were examined. The findings of the paper indicate that migration for any purpose (study, migrate or live abroad) decreases with age, being a female, and belonging to the Muslim religion, which was included in the model as a control for social capital. Other positive and significant control variables for the social capital include encouragement by other persons, such as their professors, or friends and relatives abroad who can help them in case they decide to migrate. The probability of migration of the top students is significantly higher, and that of students from higher income families too. Our results also indicate a strong positive association between the macroeconomic and political situation and the probability to migrate. The results are robust to model specification, and differ slightly, on the expected direction, with regards to the different purposes of migration. The paper contributes to the academic debate on students’ migration and brain drain in Albania by drawing on new data and providing evidence-based results. In addition, it estimates the effects of the key push factors at the micro, meso and macro levels which may assist and lead the policymakers towards more accurate decisions.

**Keywords:** students’ migration; brain drain; push and pull factors; cross-sectional data; probit regressions

**JEL Classification:** F22; C21; C31

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## **1. Introduction**

The high rates of international migration among the Albanians were also associated by migration of the skilled and highly-skilled driven mainly by economic reasons. This phenomena known as the “brain drain” has recently been one of the most common concerns in Albania, but despite the vast theoretical literature on the consequences of brain drain for developing countries, and the possibility of brain gain, the dedicated research on this topic has been very scarce. There is much less research on the determinants of the brain drain. A few decades ago the key question was posed by Portes (1976) at the individual level, why do some highly skilled individuals within a country leave, while others stay. Moreover, amongst those who go, why do some return? Such an analysis may provide a first step towards understanding the potential of international migration of the (highly) skilled, the characteristics of the future skilled migrants and the factors that influence their migration decisions. Furthermore, it will help to provide more practical and detailed policy tools.

International student mobility has been studied using various theoretical and empirical approaches. In general, it is based on two mainstreams. The first one is related to consumption reasons arguing that students migrate for non-pecuniary reasons, benefiting from the pleasure of studying and for a better quality of life, while the second is based in the human capital theory where students consider (higher) education as an investment, and estimate its costs and its returns (in terms of better job opportunities, higher salaries, etc) (Sakellaris and Spilimbergo, 2000, Agasisti, 2007; Sá et al, 2004).). However, recent studies adopt gravity models (Spilimbergo, 2009; Capuano, 2009; Van Bouwel, 2009; Thissen and Ederveen, 2006), or the human capital explanation of the phenomenon. Moreover, Rosenzweig (2006) uses US data to investigate the determinants of student inflows and uses two other approaches: the “Constrained domestic schooling model” and the “Migration model” and finds evidence to support the second. The “Constrained domestic schooling model” assumes that international students come from countries where skills are highly rewarded but where there is shortage of supply of higher education. The second one assumes that students tend to leave countries in presence of low returns to their skills and move to countries with higher returns. One of the merits of the “Migration model” is that it incorporates the idea that the choice of tertiary students is based on the ease of knowledge transfer in the destination labour market, because they intend to stay and work in the host country.

Recent research has shown that student mobility can be assumed to be similar to labour migration, especially highly skilled migration, but it has also its peculiarities. An interesting feature of student mobility is its special link with the returning decision: coming back is much more relevant for those who move to study than those who move to work. The migration literature provides broad evidence that migration is affected by uncertainty, and student mobility should not be an exception. The returns to higher education are not known for sure, and they could even mismatch previous expectations. If moving or staying for education entails a given degree of uncertainty, location after graduation may change despite of the initial intentions to settle down and work in the study place. In many cases people may decide to acquire skills in a country where they are of better quality, but then migrate to work where returns to respective skills are higher. Thus, beside migration under uncertainty, the “Return Migration” strand of literature offers a useful framework to interpret student mobility. (Capuano, 2009)

Student mobility has also been studied from a macro perspective and at uncertainty over future macroeconomic conditions as a potential push or pull factor of student flows.

A large part of the literature on international student migration has been concerned with flows of students from developing countries to industrialized countries and their determinants. Based on survey data from home and host countries of potential international students, their results suggest that the quality differential between a foreign degree and a domestic one is one of the main motivations for students to go abroad (Mazzarol & Soutar, 2000; Bourke, 2000, Szelényi, 2006). Other studies arrive to the same conclusions by including proxies of quality such as the staff-student ratio (Lee and Tan, 1984), educational opportunity (Agarwal & Winkler, 1985; McMahon, 1992) and government spending on higher education (McMahon, 1992).

Most of the theoretical and empirical studies discuss the motivations of student to migrate and the external factors that encourage or inhibit this mobility, on the personal, institutional and national level. Kim (1998) develops a theoretical model of foreign education and studied the determinants of the number of students abroad, and the growth effect of foreign education in the origin. He found that there is the negative association between the ratio between destination and origin's per-capita GDP, and students outflows, and a positive correlation between the destination's GDP growth rate and student inflows. Rosenweig (2006) also

concludes that lower skill prices in the origin country are associated to higher outflows of students from that country to the United States, and the home country per-capita GDP positively affects student outflows.

Hsing & Mixon (1996) used state-wide data together with socioeconomic variables, and found a negative correlation between net migration and per capita personal income. Baryla and Dotterweich (2001) use both university-specific characteristics and variables related to economic conditions of the regional environments and found a link between non-resident enrolment and the economic environment in which the university is located, and that quality programmes are able to attract more non-resident students. Same authors (Dotterweich and Baryla, 2005) found a positive correlation between non-resident enrolments and tuition in private institutions, but not in the public ones.

Sà et al. (2004) adopted a gravity model to study the determinants of the regional demand for higher education, paying attention to the universities' characteristics and the surrounding urban environment. They found that the behaviour of prospective students is driven by a distance deterrent effect, a positive impact of regional/urban amenities and the quality of university programmes. Agasisti and Bianco (2007) follow this stream of studies to analyse enrolment mobility in Italian public universities using a gravity approach. They conclude the same with regard to the deterrent effect of the distance, and that there is a positive impact of the resources invested in student aid, and the socio-economic conditions of the area on the student inflows. Van Bouwel (2009) uses various measures to assess the quality of a country's higher education system and to what extent quality helps explain flows of international students between countries. She finds that quality has a positive and significant effect on the size and direction of flows of students exchanged between 19 European countries. Thissen and Ederveen (2006) also found a positive and significant impact of the quality differential on the enrolment of foreign students in a country.

In conclusion, student mobility can be considered as a migration process and follow the characteristics of migration itself. The survey literature on international students' motivations to migrate from developing to industrialized countries indicates that the perceived higher quality of a foreign degree is one of the most important reasons to go abroad for higher education. The differences on earnings potential between countries in the migration theories does not explain all the dynamics of migration from developing to developed countries, and in the same

line, the quality differentials between foreign and domestic universities is one of the reasons, but not the only one to explain student mobility. Despite the growing efforts to explain student flows, the literature is scarce in investigating personal and household characteristics that determine student migration. This paper aims at providing evidence-based results on this topic and filling in the gap in the literature in Albania.

## 2. The Empirical Determinants of Migration

During the last decades the empirical literature on the motivations to migrate has grown, but the results have often been conflicting. While these inconsistent results may be attributed to differences in the context and characteristics of the country under consideration, the empirical approach, or data availability, one common shortcoming is that they are usually based on testing particular theoretical models of migration. As it may be noted in the previous section none of the theories alone can explain all the dynamics of migration.

Research indicates that belonging to the age group of 15-30 years increases the probability of migration. This age may be considered as the prime age span of migration, because at this age people first enter the labour force, and face unemployment and/or low wages, which in presence of differences in earnings potential may lead to migration. From differences in earnings potential perspective, it may also be argued that the young are likely to be more mobile than the old, and an increase in migration costs, *ceteris paribus*, would decrease migration more for older than for younger individuals. Furthermore, a member of this age may be seen as a source of surplus labour or more useful as a potential remitter, so more likely to leave.

Prior empirical research on the determinants of migration has also incorporated gender and marital status (Pessar, 1999; Kanaiaupuni, 1999, 2000; Cerruti & Massey, 2001; Oishi, 2002; del Rey Poveda, 2007; Phuong, 2008). It may be argued that women's traditional role in the household as care-givers for children and older adults may constrain their migration decisions, particularly those of married women which are restricted by men (Posel, 2002, 2003). Research also indicated that young single women usually migrate for the potential benefits of the household as whole (Chant & Radcliffe, 1992), while young single men are more likely to move for the best of their own future. However, other research suggests

that the autonomy of women is an important determinant of individual migration behaviour (Oishi, 2002) and young single females may tend to migrate to work for the same reasons their fathers or brothers would do (Gubhaju & de Jong, 2009). Including gender interactions may help control for the dependence of expected income gains from migration because of different labour market opportunities by gender (Wood, 1991). The return to education in destination and sending areas may depend on gender if labour markets at destinations and origins are segmented by gender or if other factors create gender disparities in the returns to education. Although theoretically the argument is in favour of interactions, most of studies fail to include for them or to test for pooling when considering individual migration.

Race, religion and ethnicity of the household have been included in different studies to control for historically dominant patterns, social norms or different migration behaviour by these groups. These variables may also control for the social capital of the pertinent group and are expected to significantly influence the probability to migrate and receive remittances. (Agarwal & Horowitz, 2002; Clark & Drinkwaters, 2007; Adams, 2008; Gubhaju & de Jong, 2009)

Household welfare is expected to negatively influence the probability of migration. The explicit variables used to account for household's welfare are of a wide range: home or durable assets' ownership, monthly household's income, quality of water and electricity, different indices of household assets (Garip, 2006; Palloni et al., 2007; Rainer & Siedler, 2008; Phuong, 2008; Gubhaju & de Jong, 2009), or standard of living measures (Katz, 2000). Some studies suggest investigating the possibility of a non-linear relationship between migration and welfare measures arguing that the poorest of the households are too poor to migrate because they cannot afford the costs of migration, while the richest have no incentives. (Lucas, 2005)

The explicit variables used to measure the importance of migration networks (Massey et al., 1993) vary between among studies. Such diversity may originate from the data availability, different cultures, contexts, and models, as well as from the broadness of the concept itself. To account for migration networks del Rey Poveda (2007), Richter & Taylor (2007), and Palloni et al. (2007) include a variable indicating the household's history of migration.

Despite the importance of migration in Albania, only a few studies are focused on their determinants, and none of them considers the migration of the educated young individuals. In the next section we provide a review of the existing studies in order

to get useful insights about any particularities of migration determination in Albania.

### **3. Determinants of Migration in Albania**

Carletto et al. (2004) studied the determinants of temporary and permanent migration in Albania to different countries. The household characteristics include family size, age of the head of the household, demographic composition, average adult education, agricultural assets (land and livestock), labour activities and wealth proxies (previous ownership of a vehicle and the number of rooms per capita). Their estimates suggest that most permanent migrants are young males, who come from larger households, with an older head of household and fewer smaller children. Education is not an important determinant of migration which may be attributed to the fact that most Albanians have finished middle school. The type of labour activities seems to be an important determinant of the destination country and migration duration; ownership of cattle is negatively associated with both temporary and permanent migration; the existence of migration networks and previous experience with migration are key determinants in the decision to migrate internationally, while community level networks are important only for temporary migration. Relative wealth is also a factor in the decision to migrate with the deprivation of a household relative to other households at the village level positively associated with the decision to migrate.

Finally, regional factors play a role in the migration decision. Households living in Tirana are less likely to migrate internationally. This is particularly true for permanent migration, in which case households living in all other regions have a greater probability of migrating than those in Tirana. Compared to Tirana, households in the rural Centre, Coast and Mountain are more likely to migrate temporarily, and households in the urban Coast and Mountain regions to migrate permanently. One possible reason could be that they are already internal migrants, but taking into account that the internal migration is strongest towards poorest peri-urban areas of Tirana, another explanation may be that many of them cannot afford to migrate internationally.

Konica & Filer (2009) use a migration survey of 1000 households carried out in 1996 to study the determinants of migration and amounts of remittances. The explanatory variables in the Probit equation of migration are the individual

characteristics of the migrants, geographic indicators, and two household level variables: income and size of the households. The results indicate that large, rural, and low-income households are more likely to send someone abroad. At the individual level, young, male, single, high school graduates and the unemployed are more likely to migrate.

Piracha and Vadean (2009) use the Albanian Living Standard Measurement Survey 2005 to analyse the determinants of various migration forms. Their results suggest that the best and brightest Albanians do not migrate and when they do, they are more likely to return permanently back, while the least educated engage in circular migration. Other factors that affect the form of migration that an individual engages in are family ties, migration networks, geographical location and past migration experience.

#### **4. The Data**

The data used in this study are drawn from a new survey designed to study the micro and macro-economic determinants of student migration in Albania. The survey was carried out during December 2010 and January 2011. A sample of 1210 last year students in 1 public and 3 private universities in 8 major cities of Albania: Durrës, Elbasan, Fier, Gjirokaster, Korce, Shkoder, Tirana, Vlora. The survey asks detailed questions on intentions to migrate and return on a range of different push and pull factors and a rating of their importance. These factors include individual and family characteristics, migration experience and networks, destination countries, as well as aims, incentives and barriers to international migration at the micro and macro level. Using these data we measure the probability of international migration of the most educated individuals in our country, and examine which characteristics predict migration.

The sample is composed of 62 percent females and 71 percent are single, while the rest are married or in a relationship. 21 percent of the students report to have high academic performance and more than 80 percent of them belong to households with average income levels. When asked about the probability of migration in the near future for different purposes, 26 percent of the students are sure they will go abroad for studies, 15 percent for work, other 15 percent want to live abroad, and 13 percent have already looked for a place to live. 50 percent say it is probable for them to migrate permanently. Most of the students have also prepared themselves to go abroad. 65 percent have taken special courses, 74 percent have obtained



information, and 77 percent have learned a foreign language for migration purposes. With regard to the intentions to return after potential migration, the results indicate that approximately 40 percent would like to return after finishing education, while a few of them (8 percent) say that if they would ever migrate for any reason they would like to stay abroad forever and never return.



Figure 1.

## 5. Model Specification

In light of the migration theories, the empirical approach followed in this study attempts to explain the probability of international migration for work or study, temporary or permanently, of the university graduates in Albania. In order to identify the student characteristics at the time of finishing university studies which are predictive of whether an individual will later migrate we use the probit model, where the dependent variable is a dummy variable indicating the desire to migrate or not for the given purpose (work or study). Specifically, the model takes form:

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

where  $Pr$  denotes probability,  $\Phi$  is the Cumulative Distribution Function of the standard normal distribution,  $\beta$  are the parameter that will be estimated by maximum likelihood and  $X$  is a vector of explanatory variables.

We control for age and sex, since older individuals have had more time over which to migrate and we are interested to see whether the rate of migration varies by sex. Another variable of interest is family wealth, which is generally expected to positively affect migration decision. As international migration is likely to be an expensive venture, wealthier families can better afford its costs and have better chances of arranging work permits and/or paying for education abroad. Ability to pay for foreign education is also considered as an important push factor of student outflows (Kim, 1998). The household wealth in this study is measured through three dummy variables indicating the current level of income of the family of the student, above average wealth, average wealth, or below average wealth.

To control for peer or other effects we include two dummy variables indicating if someone at their university or if other persons that have travelled, studied or live (d) abroad encourages them to go abroad. To consider the migration network effect three other dummy variables are used. The first is the answer to the question if they have any friends or relatives living in other countries who could help in case they want to migrate abroad, and the second indicates if the individual has ever been abroad for more than three months. In the model there are also included dummy variables indicating religion views of the respondent, based on the argument that this form of networking may embed special forms of social capital which may affect migrate decisions.

Finally, we consider macroeconomic variables which might explain why a young individual graduating at one point in time may consider permanent or temporary migration for study or work. Since the inclusion of different macroeconomic variables is an empirically impossible task (due to lack of variation among observations), the students were asked to evaluate the importance of some macro and community level variables if they would ever decide to migrate. These variables include the economic conditions, social conditions including social norms, social system, social relationships, social and family support, life style, living dependently or independently; the political conditions including political situation, political system, ability to make changes, personal security and the personal conditions that include issues related to partner, parents and children.

## **6. Model results: What determines migration of the Albanian graduates?**

Tables 1-8 in the appendix present the results of estimating probit models for the determinants of ever migrating as a function of the selected variables. Four separate models are estimated on the entire sample of interviewed students, and four other ones are carried out using the part of the sample that claims to have above average performance at school. The first regression is estimated for intentions to migrate for any purpose, and the other three are run for migration for further education, work and intentions of settling and living abroad. The estimation of the model measuring the probability to study abroad is carried out for robustness only, bearing in mind that in many cases migration for study naturally leads onto work, migrants may gain better skills abroad before working, and that it is almost impossible to have only one exclusive purpose to migrate, meaning that the results are not being driven by migration purely for study. Besides the explanatory variables listed in the previous section, two dummy explanatory variables indicating the academic performance of the student are also included.

The signs of the estimated coefficients generally go in the expected directions and do not vary between specifications, indicating robustness of the results. First of all, the likelihood of migration for any purpose (study, migrate or live abroad) decreases with age. Also, being a female lowers migration propensities and the difference in migration intentions between males and females is statistically significant. Unsurprisingly, there is no difference in the probabilities of migration between average and below average students. However, the probability of migration of the top students is significantly higher. It is also interesting to notice that being a Muslim is associated with lower migration propensities.

It is important to notice that the results of the regression confirm the theory of migration as a selective process not only with regard to the individual characteristics of the students, but also with regard to the characteristics of their households. There is no difference between migration propensities of students whose families have low and average income, but the difference is positive and statistically significant when their families have high levels of income. Besides family income, other important predictors include different forms of social capital. The probability of migration increases when students are encouraged by other persons, such as their professors, or friends and relatives abroad who can help them in case they decide to migrate. This latter result indicates that students can

undertake further education or work abroad with some help offsetting the higher costs of migration.

The perception of students on the macroeconomic environment has a small and statistically insignificant relationship with the likelihood of migration (for work, study or living abroad) in the sample. Nevertheless, the importance of these macro-variables is crucial when we model the (temporary) migration for work and for living abroad permanently (Tables 2 and 3). In these two cases, we find a strong positive association with the evaluation that students have given on the importance of the macroeconomic and political situation when considering migration. In table 3 it can be noticed that age, gender, religion and academic performance do not have any statistically significant effect on the migration to migrate permanently. Given the tradition of the Albanian society, it is not surprising that the results indicate that students' migration for work is not only significantly affected by macroeconomic variables, but also negatively related to being a female (table 2).

Finally, in tables 4-8 we show that the results are similar when considering the determinants of migration of the students with high academic performance. The main determinants of the migration of the best students include age, gender, family income, encouragement at university or by current migrants, but it is interesting to note that the political and social norms and conditions are also important determinants of leaving the country for study purposes and to permanently live abroad, while the other macro indicators are not significantly related. A possible explanation for it may be the increased awareness and sensibility that students have with regard to the political and social developments, especially the recent ones, while the economic and personal conditions are among the determinants of migration for work purposes of the students with high academic performance.

## **7. Conclusions**

This paper investigated the main determinants of last year students' intentions to migrate internationally. The data for this study were randomly gathered in public and private universities. The sample consisted of 1197 observations and the empirical methodology of probit regressions was used. The main finding of the paper is that the most common determinants of student migration are in line with most determinants of general migration: being young, male, having high incomes and good networks, and being encouraged by others. Furthermore, our results indicate that migration of students is in itself a selective process, with the migration

of the best being positively affected by migration networks, income and support by professors and friends. At the macro level, economic conditions and social norms are the most important determinants of migration

It must be noted however, that many other non-personal determinants of student mobility are likely to play important roles and interact, and many others are not measurable at all, such as the reputation of academic institutions in the host countries. Furthermore, in order to attract international students many of the countries have made changes in the student admission policies, student outreach and university marketing programs, and retention policies to keep desirable students in the country (Lowell & Martin, 2007).

Several caveats have to be acknowledged upfront when making broad conclusions from this analysis. First, the focus of this investigation is on university graduates, but different motivations may be driving migration of more educated or highly-skilled, as well as other age groups of highly-skilled. Second, university graduates may not be the most important, neither the only group when formulating brain gain policies, but it is certain that they are of interest to policymakers. Third, for more accurate policy recommendations the analysis has to be enriched with the determinants of return migration of the (highly) skilled.

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## APPENDIX

Table 1. Marginal effects from probit regression on the determinants of migration

	dF/dx*	Std. Err.	z	P> z
<b>Age</b>	-0.016	0.008	-2.030	0.042
<b>Female</b>	-0.115	0.026	-4.320	0.000
<b>Married</b>	0.042	0.129	0.330	0.739
<b>Atheist</b>	-0.109	0.074	-1.360	0.173
<b>Muslim</b>	-0.046	0.018	-2.540	0.011
<b>Below average performance</b>	0.002	0.052	0.050	0.962
<b>Above average performance</b>	0.110	0.024	4.590	0.000
<b>Low family income</b>	0.018	0.032	0.580	0.562
<b>High family income</b>	0.060	0.018	3.320	0.001
<b>Lived abroad for more than 3 months</b>	0.044	0.042	1.030	0.303
<b>Friends and relatives abroad</b>	-0.015	0.060	-0.240	0.808
<b>Encouraged at university</b>	0.111	0.017	6.530	0.000
<b>Encouraged by migrants</b>	0.116	0.037	2.970	0.003
<b>Economic conditions</b>	-0.025	0.043	-0.580	0.562
<b>Social norms and conditions</b>	0.018	0.035	0.520	0.604
<b>Political situation</b>	0.046	0.047	0.960	0.338
<b>Personal conditions</b>	0.031	0.033	0.930	0.354

Number of obs = 1197

Pseudo R2 = 0.050

Log pseudolikelihood = -766.969

Correctly classified 62.57%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Table 2. Marginal effects from probit regression on the determinants of migration for work**

Probit regression, reporting marginal effects Number of obs = 1197

Log pseudolikelihood = -485.33029

	<b>dF/dx*</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.002	0.005	-0.470	0.635
<b>Female</b>	-0.090	0.020	-4.330	0.000
<b>Married</b>	0.097	0.163	0.680	0.496
<b>Atheist</b>	-0.082	0.045	-1.430	0.153
<b>Muslim</b>	-0.048	0.012	-4.100	0.000
<b>Below average performance</b>	0.005	0.034	0.160	0.874
<b>Above average performance</b>	0.008	0.040	0.210	0.830
<b>Low family income</b>	0.001	0.030	0.020	0.980
<b>High family income</b>	0.004	0.021	0.180	0.855
<b>Lived abroad for more than 3 months</b>	0.038	0.034	1.210	0.228
<b>Friends and relatives abroad</b>	-0.040	0.037	-1.140	0.252
<b>Encouraged at university</b>	-0.005	0.019	-0.260	0.798
<b>Encouraged by migrants</b>	0.067	0.015	4.480	0.000
<b>Economic conditions</b>	0.084	0.022	3.010	0.003
<b>Social norms and conditions</b>	-0.016	0.028	-0.570	0.567
<b>Political situation</b>	0.036	0.019	1.880	0.060
<b>Personal conditions</b>	-0.013	0.027	-0.500	0.619

Number of obs = 1197

Pseudo R2 = 0.049

Log pseudolikelihood = -485.330

Correctly classified 84.80%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0



**Table 3. Marginal effects from probit regression on the determinants of permanent migration**

	<b>dF/dx*</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.005	0.003	-1.760	0.078
<b>Female</b>	-0.037	0.027	-1.370	0.171
<b>Atheist</b>	-0.088	0.038	-1.660	0.096
<b>Muslim</b>	-0.034	0.028	-1.260	0.207
<b>Below average performance</b>	0.070	0.048	1.680	0.094
<b>Above average performance</b>	-0.011	0.012	-0.920	0.359
<b>Low family income</b>	0.001	0.025	0.050	0.964
<b>High family income</b>	0.075	0.023	3.810	0.000
<b>Lived abroad for more than 3 months</b>	-0.014	0.028	-0.480	0.630
<b>Friends and relatives abroad</b>	0.034	0.035	0.880	0.380
<b>Encouraged at university</b>	0.016	0.017	0.930	0.354
<b>Encouraged by migrants</b>	0.041	0.019	2.150	0.031
<b>Economic conditions</b>	0.089	0.016	3.910	0.000
<b>Social norms and conditions</b>	0.041	0.017	2.180	0.029
<b>Political situation</b>	0.005	0.034	0.130	0.894
<b>Personal conditions</b>	0.012	0.025	0.490	0.627

Number of obs = 1188

Pseudo R2 = 0.0371

Log pseudolikelihood = -489.866

Correctly classified 84.68%

**note: Married predicts non-migration for living perfectly**

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Table 4. Marginal effects from probit regression on the determinants of migration for study**

	<b>dF/dx*</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.012	0.009	-1.480	0.140
<b>Female</b>	-0.003	0.028	-0.110	0.913
<b>Married</b>	0.048	0.102	0.500	0.617
<b>Atheist</b>	-0.005	0.062	-0.080	0.940
<b>Muslim</b>	0.006	0.022	0.290	0.773
<b>Below average performance</b>	-0.066	0.032	-2.020	0.044
<b>Above average performance</b>	0.174	0.020	10.060	0.000
<b>Low family income</b>	-0.013	0.043	-0.300	0.765
<b>High family income</b>	0.050	0.014	3.790	0.000
<b>Lived abroad for more than 3 months</b>	0.063	0.035	1.750	0.080
<b>Friends and relatives abroad</b>	-0.088	0.062	-1.460	0.145
<b>Encouraged at university</b>	0.141	0.013	11.940	0.000
<b>Encouraged by migrants</b>	0.081	0.047	1.570	0.116
<b>Economic conditions</b>	-0.048	0.028	-1.660	0.096
<b>Social norms and conditions</b>	-0.014	0.025	-0.550	0.580
<b>Political situation</b>	0.025	0.043	0.550	0.581
<b>Personal conditions</b>	-0.021	0.013	-1.720	0.086

Number of obs = 1197

Pseudo R2 = 0.0708

Log pseudolikelihood = -628.257

Correctly classified 75.19%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Table 5. Migration of the brightest to study, work, or living**

	<b>dF/dx*</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.024	0.015	-1.640	0.102
<b>Female</b>	-0.082	0.039	-2.070	0.038
<b>Married</b>	-0.335	0.072	-3.220	0.001
<b>Atheist</b>	-0.058	0.153	-0.370	0.709
<b>Muslim</b>	-0.052	0.039	-1.330	0.184
<b>Low family income</b>	0.094	0.078	1.190	0.234
<b>High family income</b>	0.097	0.045	2.130	0.033
<b>Lived abroad for more than 3 months</b>	0.026	0.060	0.430	0.669
<b>Friends and relatives abroad</b>	-0.219	0.145	-1.400	0.160
<b>Encouraged at university</b>	0.168	0.036	4.600	0.000
<b>Encouraged by migrants</b>	0.065	0.081	0.800	0.421
<b>Economic conditions</b>	-0.112	0.092	-1.220	0.224
<b>Social norms and conditions</b>	0.185	0.047	3.610	0.000
<b>Political situation</b>	-0.066	0.070	-0.940	0.348
<b>Personal conditions</b>	-0.093	0.079	-1.160	0.244

Number of obs = 255

Pseudo R2 = 0.094

Log pseudolikelihood = -160.01956    Correctly classified 58.06%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

Table 6. Migration of the brightest for study

	dF/dx*	Std. Err.	z	P> z
<b>Age</b>	-0.017	0.014	-1.260	0.207
<b>Female</b>	0.022	0.016	1.420	0.156
<b>Married</b>	-0.266	0.066	-2.500	0.013
<b>Atheist</b>	0.002	0.142	0.010	0.991
<b>Muslim</b>	-0.025	0.059	-0.420	0.676
<b>Low family income</b>	0.011	0.096	0.120	0.905
<b>High family income</b>	0.153	0.041	3.750	0.000
<b>Lived abroad for more than 3 months</b>	0.107	0.059	1.780	0.074
<b>Friends and relatives abroad</b>	-0.261	0.100	-2.510	0.012
<b>Encouraged at university</b>	0.161	0.055	2.870	0.004
<b>Encouraged by migrants</b>	0.089	0.089	0.970	0.331
<b>Economic conditions</b>	-0.081	0.091	-0.910	0.364
<b>Social norms and conditions</b>	0.112	0.063	1.660	0.098
<b>Political situation</b>	-0.107	0.065	-1.680	0.093
<b>Personal conditions</b>	-0.071	0.059	-1.200	0.231

Number of obs = 255

Pseudo R2 = 0.0863

Log pseudolikelihood = -156.43068 Correctly classified 69.09%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Table 7. Will the brightest migrate for work?**

(Std. Err. adjusted for 8 clusters in city)

	<b>dF/dx</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.002	0.006	-0.320	0.749
<b>Female</b>	-0.093	0.027	-2.410	0.016
<b>Married</b>	0.015	0.109	0.140	0.885
<b>Atheist</b>	-0.114	0.061	-1.880	0.060
<b>Muslim</b>	-0.077	0.046	-2.560	0.011
<b>Low family income</b>	0.045	0.061	0.870	0.385
<b>High family income</b>	0.089	0.068	1.790	0.073
<b>Lived abroad for more than 3 months</b>	0.021	0.043	0.520	0.604
<b>Friends and relatives abroad</b>	-0.226	0.107	-2.490	0.013
<b>Encouraged at university</b>	0.035	0.018	2.110	0.035
<b>Encouraged by migrants</b>	-0.018	0.049	-0.350	0.723
<b>Economic conditions</b>	0.101	0.028	1.980	0.048
<b>Social norms and conditions</b>	0.029	0.031	0.850	0.393
<b>Political situation</b>	0.061	0.042	1.490	0.136
<b>Personal conditions</b>	-0.134	0.073	-1.880	0.060

Number of obs = 255

Pseudo R2 = 0.1181

Log pseudolikelihood = -97.697088    Correctly classified 84.71%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Table 8. What makes the brightest leave forever?**

	<b>dF/dx*</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>
<b>Age</b>	-0.015	0.002	-5.790	0.000
<b>Female</b>	-0.010	0.019	-0.520	0.605
<b>Atheist</b>	-0.082	0.029	-2.310	0.021
<b>Muslim</b>	-0.048	0.033	-1.600	0.110
<b>Low family income</b>	0.031	0.065	0.520	0.600
<b>High family income</b>	0.043	0.067	0.720	0.474
<b>Lived abroad for more than 3 months</b>	-0.038	0.025	-1.370	0.171
<b>Friends and relatives abroad</b>	-0.033	0.097	-0.370	0.709
<b>Encouraged at university</b>	0.066	0.034	2.300	0.021
<b>Encouraged by migrants</b>	-0.053	0.043	-1.290	0.197
<b>Economic conditions</b>	0.005	0.033	0.140	0.892
<b>Social norms and conditions</b>	0.115	0.028	3.260	0.001
<b>Political situation</b>	0.001	0.016	0.050	0.957
<b>Personal conditions</b>	-0.037	0.027	-1.450	0.148

Number of obs = 249

Pseudo R2 = 0.0950

Log pseudolikelihood = -91.489705    Correctly classified 84.68%

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P&gt;|z| correspond to the test of the underlying coefficient being 0

**Note: Marriage predicts no-migration perfectly**