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**Conference Paper**

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Proceedings of the German Development Economics Conference, Zürich 2008, No. 7

**Provided in Cooperation with:**

Research Committee on Development Economics (AEL), German Economic Association

*Suggested Citation:* Danzer, Alexander M.; Dietz, Barbara (2008) : Economic Migration, Networks and Human Capital Transferability from the New European Borderlands. A Comparison of Five Eastern European Countries., Proceedings of the German Development Economics Conference, Zürich 2008, No. 7, Verein für Socialpolitik, Ausschuss für Entwicklungsländer, Göttingen

This Version is available at:

<https://hdl.handle.net/10419/39903>

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# **Economic Migration, Networks and Human Capital Transferability from the New European Borderlands.**

## **A Comparison of Five Eastern European Countries.**

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-- Version: 31 January, 2008 --

### **Abstract**

In the paper we use a unique new data set which has been collected in late 2006 in Armenia, Belarus, Georgia, Moldova and Ukraine to investigate the determinants for short term migration and its destination and duration patterns. Special attention is paid to the role played by personal networks to Eastern and Western destinations as well as investments into the transferability of human capital made by migrants prior to their stay abroad.

We find that many determinants and migration patterns are quite similar across the CIS countries under consideration but exhibit some surprising differences to standard results from the migration literature, e.g. the prevalence of older migrants and the low importance of children in the migration decision process. Networks and human capital transferability are the main explaining factors for the migration and destination decision, a result proofing robust after correcting for endogeneity.

We expect that migration is likely to grow in importance for some countries at the European Borderlands, as networks develop and the costs of migration decrease. However, our analysis reveals that fears of brain drain have little substance as the educational background of migrants is rather low. As a considerable number of migrants have invested into destination country specific human capital prior to migration, this improved human capital endowment can benefit both, migrants and the society of sending countries, alike.

### **Keywords:**

Migration, human capital transferability, migration networks, cross-country study

## 1. Introduction

Although recent migrations from the new European Borderlands are increasingly discussed, there is only little information on the quantity, determinants and patterns of these movements. Official statistics on the flow of people in these formerly Soviet countries are typically scarce and sometimes misleading, while individual data in the form of survey results are generally lacking. Against this background the EU INTAS project “Patterns of Migration in the New European Borderlands: An assessment of Post-Enlargement Migration Trends in NIS Border Countries” (INTAS Ref. No: 04-79-7165) took the initiative, to collect survey based information on the migration situation in five former Soviet Union countries: Armenia, Georgia, Moldova, Belarus and the Ukraine.

The paper takes advantage of this unique cross-country survey study which has been conducted with comparable survey methodology. It is the first thorough analysis of migration patterns in the region. Because interviews were conducted in the sending countries, we basically got information on those who have returned after migrating abroad for a certain period of time. Thus, the strength of our survey is the inclusion of irregular and illegal migrants, independent of the way, people crossed the border and found a job in the receiving country. Furthermore, the survey looked specifically at network relations in the migration process and tried to capture the efforts of individuals to ex ante acquire transferable human capital. Using the results of this comprehensive survey, we analyse the determinants of migration movements from the European Borderlands and explore the factors which influence the duration of movements and the choice of destination regions. As a particular concern of this research we investigate whether standard results from the migration literature can be identified in the post-Soviet context.

Our main findings are the following: Migration patterns are much in line with expectations from the economic literature on the motivations to migrate. However, we disentangle some post Soviet peculiarities such as the age structure of migrants. Migration networks and the general political orientation of the countries of origin strongly channel the migration flows to either Russia or the European Union. Human capital transferability proves to be important and lends a strategic advantage to Russia, where language barriers are low. Yet, many migrants invest in improved human capital transferability already prior to the move. These results support our intuition that migration at the European Borderlands cannot be fully understood without taking into account the trade-off between natural human capital transferability and the potential to make investments or use networks instead.

The remainder of the paper is as follows: In section 2 we give the aim and motivation for the study of migration patterns in the European borderlands. Section 3 is a review of important theoretical considerations for the understanding of

migration decisions and the way human capital investments and personal networks influence them. Section 4 gives an overview of the five countries under consideration which have made some similar transition experiences but also differ especially in the political sphere. From this we expect to draw different conclusions for the motivations to migrate. Section 5 introduces the new data set. Section 6 describes the methodology and econometric approach employed. The results are reported in section 7 before we conclude with some relevant policy implications for both, migrant sending and receiving countries.

## 2. Aim and motivation

With the political and economic transformation in Central and Eastern Europe and later with the break-up of the Soviet Union, new migration opportunities manifested in the region, closely observed by governments and public of EU-15 countries. Fears of high numbers of immigrants from bordering Central and East European states were articulated since the beginning of the 1990ies, strengthening in the light of the upcoming enlargement of the European Union which was expected to facilitate the movement of people from the new East European Union member states towards the EU-15. Against this background, transition regulations for labour migrations were introduced as a precondition for enlargement which allowed the EU-15 states to temporarily restrict the immigration of workers from the new East European Union countries (and vice versa).<sup>1</sup> Nevertheless, labour migration from the new European Union members towards the EU-15 increased after enlargements, primarily directed to those EU-15 countries that had opted against immigration restrictions, as for example Great Britain and Ireland. In contrast to political concerns most studies found these recent movements in the final analysis economically rewarding.

Recently, new migration challenges have been identified in countries either directly bordering the EU (Moldova, Ukraine, Belarus) or being very close to its borders (Armenia, Georgia). Next to return migrations in the aftermath of the dissolution of the Soviet Union, studies found a growing motivation for labour migrations in the region, either towards European Union states, the USA and Canada, or to countries formerly belonging to the USSR, such as Russia. With respect to migrations in the new East European borderlands a tendency towards illegal border crossings, short-term and circular movements can be observed. In sending regions brain drain is seen with concern, while the receipt of remittances is mostly considered rewarding for the economies and societies. On the side of receiving countries, especially in old and new European Union member states, the reaction towards a potentially increasing migration from the new

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<sup>1</sup> This regulation terminates in 2011.

Eastern borderlands is mixed. While some politicians, labour market experts and representatives of enterprises promote a regulated labour migration from non European Union states in the light of aging societies and a mismatch in labour markets, there exist a considerable opposition against new labour migrations. The contra arguments include potential downward pressure on wages and growing unemployment prospects for natives, in addition to expected social tensions resulting of an increasing social and cultural diversity. To enter into the debate about the likely outcomes of migrations in the new East European borderlands, solid information on the background, structure and direction of these movements is required. It is the aim of this study to identify the core patterns of economic migration movements in this region, drawing on key arguments of migration theory and on a unique data base.

### 3. Theoretical considerations and empirical findings

In this section we want to review basic theoretical literature on the determinants of migration decisions, migration duration and choice of destination regions, to identify the key factors driving and channelling labour movements in Former Soviet Union countries.<sup>2</sup> Furthermore we present some empirical findings on these issues, focusing primarily on economic migration.

One of the most influential theoretical approaches to explain international movements, the neoclassical theory of labour migration, emphasizes the responsibility of wage differences between different countries or regions for the movement of people. In a scenario of free mobility, workers would move from countries with lower wages to those with comparatively higher wages. In cases where unemployment is considered the probability of finding a job has to be considered (Harris and Todaro 1970). In testing this theoretical assumption many studies found a statistically significant positive effect of income differentials on migration movements (Borjas 1987, Clark et al. 2002, Mayda 2007). Although this proves the driving force of income differences in migrations, the comparatively straightforward argumentation of neoclassical economics can not convincingly explain those frequent empirical cases where high wage differences between countries are not accompanied by substantial migration relations. Furthermore it is often observed that neither the poorest countries nor the poorest parts of migration sending regions are heavily involved in labour movements, what could be expected in a neoclassic world (Massey 2005, Hatton and Williamson 2005).

In an effort to model migration decisions more realistically, human capital the-

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<sup>2</sup> For a comprehensive survey on migration theories see Bauer and Zimmermann 1998 and Massey et al. 1998.

ory focuses on individual decision-making and highlights the influence of human capital characteristics in the migration process (Sjaastad 1962). According to human capital theory, people move if the discounted values of expected returns to individual human capital - reduced by migration costs - are bigger in the immigration than in the home country. Incorporating individually determined migration gains and costs which include the costs for travelling, information and income losses in the migration process, as well as the psychological costs of leaving family, friends and the home country environment strengthen the explanatory power of the model. In this framework, human capital characteristics, such as gender, age, education, work experience, language competencies etc. essentially determine migration decisions.

The human capital model allows exploring the gender aspect of migration and helps characterize female and male migration motivations. Gender specific migration research has put forward hypotheses which emphasize family and societal factors beside individual characteristics in shaping the differences of movements between men and women (Boyd and Grieco 2004). According to these approaches, females in traditional societies migrate less often than in more open ones and they are typically more attached to their children and dependent relatives at home than men. With respect to age, the human capital approach would expect younger persons to be more likely to migrate, as their comparatively long working career ahead offers the largest profits from moving abroad. In addition, the young have less invested in home country specific human capital compared to older age cohorts thus being more inclined to leave. This is reflected in many past and contemporary (labour) migration flows, which predominantly consist of people in the beginning of their working career. Empirical studies confirm the relationship between younger age and higher migration intentions, pointing in some cases to an inverse U-shaped age-migration pattern (Stark and Taylor 1991).

In looking at education, the work experience and language competencies as well as the transferability of these forms of human capital to the receiving economy is expected to be an essential determinant of migration. The more likely the transferability of individual human capital, the greater should be the incentive to go abroad. It is often assumed that this is especially the case with higher skilled individuals. Nevertheless, the interpretation of the effect of higher education and longer work experience on migration is ambiguous. On the one hand, higher educated individuals may find better employment at home and thus feel less pressure for emigration, on the other hand, they may also face better employment opportunities abroad and generally tend to have lower migration costs due to more effective and efficient search strategies for transportation, housing and foreign employment. It has to be considered though that in a number of cases only low-skilled segments of labour markets in receiving economies are open to immigrants, making it not attractive for highly-skilled workers to move

(Stark and Taylor 1991).

In the framework of human capital theory migration duration and destination can likewise be modelled on the basis of individually expected gains, costs and risks which are defined in dependence of migrants' demographic and labour market characteristics. In this context, it may be favourable for migrants to opt for a certain (limited) time span and for a particular destination region. In the case of short term migrations, for example, the nexus between younger age and migration intentions should be weaker than in the case of long-term movements as temporary migrants typically do not plan to build a career in the destination country. Shorter movements can also be predicted for females with family obligations, particularly in more traditional societies or communities, while this may not be the case for men. With respect to higher education and destination country specific language skills we would predict these factors to result in longer stays abroad.<sup>3</sup> Concerning destination regions, the argumentation in the context of human capital considerations is straightforward: all forms of destination specific skills, talents and knowledge should strengthen movements towards that respective region.

In migration research evolved an increasing literature on the investment of immigrants into skill transferability and its earnings effects after migrating into a foreign country (Chiswick et al. 2005, Chiswick and Miller 2007). This *a posteriori* concept for improvements into human capital transferability is typically used to explain the U-shaped earnings function of immigrants in the country of destination. In building on this work we suggest to introduce *a priori* investments into human capital transferability (for example language acquisition, training courses etc.) which would capture the efforts of individuals to prepare migrations *ex ante* in accumulating (destination country) specific human capital.<sup>4</sup> We believe that this new concept is particularly helpful in explaining duration and destination of migration movements in a post-Soviet setting.

Is it realistic that individuals decide on migration independently? And are income perspectives the most important driving forces to move? A comparatively novel theoretical approach, the new economics of labour migration, rejects the purely individual point of view and the dominance of earning differential in explaining the movement of people. It is argued that households are the relevant decision making unit and that the failure of capital, credit and insurance markets are responsible for migration movements in the first instance (Stark 1991).

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<sup>3</sup> However, Dustmann (2001) and Dustmann and Weiss (2007) found that return migrants may be motivated to come back because they have accumulated human capital abroad which improves their earnings potential in the home country.

<sup>4</sup> Chiswick and Miller (2007: 22) support this hypothesis as they found a tendency among labour immigrants in America to move into higher skill levels after arrival than indicated by their level of schooling. An argument in this context is that those people, when planning to migrate, invested into country specific human capital of the receiving economy.

Cases in kind are developing countries, where rural households can only survive under market conditions if they make capital investments and insure their production against risks. Likewise, workers in a number of transition economies are only marginally protected from unemployment risks. Health insurance systems collapsed and credit markets to finance the start up of a (small) business or private housing do not exist or function properly. In these economies, families may send its members abroad to earn money for risk insurance and capital-building. In this context, the migration decision of households can be interpreted as a portfolio strategy to diversify family incomes.

Whereas the economic theories presented above refer to the labour supply side in the migration process, some economists point to the demand for labour in segmented labour markets as the initial incentive for international movements (Piore 1979). In advanced industrial societies, labour market segmentation is characterized by a primary labour market with secure employment conditions, comparatively high wages and social security standards, and a secondary labour market with a highly variable demand, low wages, little security and adverse working conditions. Because native workers are drawn into the primary sector of the economy and in many cases are not willing to accept secondary labour market jobs, immigrant labour is recruited. Under these conditions demand growth for workers in the secondary labour market presumably translates into increasing immigration, since enterprises are not willing to pay higher wages and improve labour conditions in secondary markets as a precondition for attracting native workers. Particularly non-traded goods sectors – that can not be outsourced and do not require high skill levels – can be expected to be characterized by segmentation and the demand for low skilled immigrants. In the case of governmental recruitment programs or bilateral contracts on labour migrations it can be argued that the inflow of foreign workers is to a considerable extent demand driven. Zimmermann (1994) showed for the labour recruitment era in Germany that the business cycle explained immigration flows to a considerable extent, thus confirming the role of the demand side in this labour movement.

While economic arguments were highlighted so far, social relations have been shown to shape and support the movement of people to a considerable extent. In this context network theory argues that migrant networks develop across time and space which stabilize and potentially increase population movements. These networks are traditionally defined as connections between migrants and non migrants in the countries of destination and origin through ties of kinship, friendship, ethnicity or shared community. Because migrant networks reduce the costs and risk of movements, they are expected to increase the likelihood of further migrations (Massey et al. 1998: 42). In the empirical literature there is strong support for the relevance of ‘family, friends and neighbours’ effects in migration movements (Munshi 2003). However, recent studies have observed



that network relations in migration processes often relate to recruiters, smugglers, consultants and other agents who support the movement of people because of financial interests (Krissman 2005). Stephen Castles (2007: 361) has labelled this development 'migration industry', where all kind of commercial agents facilitate the movement of people and the job search of (illegal) immigrants. According to various studies, the existence of agencies to help and prepare migrants for their stay abroad is widespread in many post-Soviet countries (IOM 2005).

The theoretical arguments presented above allow us to formulate a number of hypotheses with respect to the determinants and characteristics of movements in countries belonging to the new European borderlands. All of these states experienced economic and social transitions after the break up of the Soviet Union which resulted in growing poverty, job losses, increasing social inequality, a break down of social security systems and market failures. Against the background of this scenario we assume individuals to decide on migrations in considering expected gains and costs of moving abroad in dependence of their human capital endowment. Furthermore we suggest that the individual decision to move is related to the family strategy in coping with the obstacles of transition societies. In line with the literature reviewed we anticipate younger individuals with no kids and comparatively little family obligations being more inclined to leave. Females are expected to be less likely to go abroad than men, although the comparatively open societies in Eastern Europe with a high percentage of working and well educated women may mitigate this widespread behaviour a bit. With respect to education and work experience we tend to follow the argument that higher educations and skills may not pay off, as immigrants from Eastern Europe in many cases do not get a chance to make use of their talents, particularly in the West. Special competencies, however, that can easily be transferred into the sending country or are a precondition for certain jobs there (language skills, for example) should strengthen the motivation to move. Likewise, all kinds of networks, relations to ethnic communities or migration agents should contribute to a higher preference for going abroad.

Finally we would like to put forward an argument that is often denied in identifying the determinants of labour movements. This refers to migration policies and institutional barriers in sending and receiving countries. Although labour migrants from the CIS in general face little control in leaving their home countries, the entrance to other states for work, especially to the West, is restricted. This contributes to high costs and risks, because individuals willing to migrate have to cope with these problems by either paying an agent to cross the border and finding a job or relying on networks. In both cases migrants may nevertheless risk a life in a foreign country without legal entrance and labour permits. Against this background it can be expected that migration policies and entrance barriers of receiving countries will influence the duration and the destination

choice of movements.

#### 4. Countries under consideration: stylized facts

The countries we are looking at here – Armenia, Belarus, Georgia, Moldova, and Ukraine - were all part of the Soviet Union, thus sharing common economic and political experiences and common transformation challenges after the break-up of the Soviet Union. Although all of these countries went through specific migration episodes after becoming independent, some common patterns exist. Because the collapse of the Soviet Union triggered the return of its populations to their (former) ethno-national homelands, migrations in the initial post-Soviet era were characterized by the dominance of ethnic exchange movements. While ethnic Russians, having lived in Belarus, the Ukraine or Moldova moved back to their former home countries; Ukrainians, Belarussians or Moldavians who had settled (or were forced to settle) in other Soviet Union republics returned to their newly independent nation states. Beside ethnically motivated return movements, a number of post Soviet states also experienced considerable emigrations because of political conflicts and ecological catastrophes. In Georgia for example political unrest and ethnic clashes triggered huge emigrations, whereas in Armenia, the Nagorno-Karabakh conflict and the Spitak earthquake drove people out (Yeganyan 2006). These movements were primarily directed towards neighbouring states formerly belonging to the USSR. Between 1990 and 2006 approximately 80% of emigrants from former Soviet Union states moved within the CIS region, predominantly towards Russia (Mansoor and Quillin 2006: 3).

According to official data the Ukraine, Moldova, Armenia and Georgia experienced remarkable net emigrations between 1991 and 2005 (see Figure 1). Migration losses in this period ranged from 1.2% of the population (575 thousand people) in the Ukraine to 22.6% of the population (982 thousand people) in Georgia. To the contrast, net immigrations prevailed in Belarus, reflecting constraint emigration opportunities and a population with little experience in international movements.

Overall, official migration data indicate a general decrease of migration activities in the new East European borderlands since the middle of the 1990ies, pointing to declining ethnic exchange movements within the CIS countries (Mansoor and Quillin 2006: 5). In this period, migration movements in the region underwent two remarkable changes: the share of people leaving for the West increased and economically motivated movements gained in weight (Mansoor and Quillin 2006:5, Malynovska 2006). While the USA, Germany and Israel had been the most important Western destinations in the initial migration period after the collapse of the Soviet Union, in the later period an increasing number of Western countries, particularly in the European Union, were addressed by CIS emigrants.

Based on the official data presented above (see Figure 1), net migrations in all countries under consideration here followed a decreasing trend since the end of the 1990ies which contradicts the empirical observation, that Russia as well as a number European Union states faced an increasing immigration from the Ukraine, Moldova and Georgia in that period (OECD 2006). This inconsistency is due to the fact that only persons who receive an official permission to reside abroad (Ukraine, Belarus) or those who cancel their residence permits (Moldova, Georgia) are officially registered as emigrants in these states. Citizens of post Soviet countries who leave on the base of family visits and tourist visa, who participate in bilateral agreements for short-term work or in a student exchange program are not counted in official emigration statistics. Besides, illegal border crossing or overstaying add to an increasing number of citizens from post Soviet states, living and working abroad.<sup>5</sup>

In the light of theoretical considerations presented above, the growing economic migration intentions in the new European borderlands should reflect disparities in income, wealth and quality of life between sending and receiving regions. Actually, in comparing the GDP per capita in the new European borderlands (Belarus, the Ukraine, Moldova, Georgia and Armenia) with corresponding data in Russia and some EU countries, considerable differences in living standards can be observed in these geographically adjacent regions (Table 1).

Further arguments that explain the growing dynamics of economically motivated migration in the European borderlands relate to network relations, such as former contacts in the framework of the Warsaw pact, ethnic affiliations across borders, linguistic ties in the case of Russia and specific migration traditions connected to former ethnic return movements. Borders between the new European Union members and former CIS countries had been porous until the year 2003, when visa procedures were introduced. In spite of that the various minority populations on both sides of the new Eastern borders of the European Union create strong network connections. For instance, in Zakarpathia (Ukraine) near the Hungarian border, live approximately 151,000 ethnic Hungarians. The Polish minority of 140,000 people in Ukraine settled near the Polish border, while ethnic ties to Ukraine prevail on the Polish side as well: The official statistics register 312,000 Polish citizens who have been born in the Ukraine (OECD 2006: 269). Since the introduction of the new law on citizenship in Romania in 2003, approximately 530,000 Moldavian citizens have applied for a Romanian passport (Kennedy 2007). Moldavians who can demonstrate that they, their parents, or their grandparents lived in Moldova when it was part of Romania before the end of World War II are eligible for dual citizen-

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<sup>5</sup> Although the weak and often inconsistent data base is a general problem in documenting international migration, a number of studies confirm the growth of illegal labour migrants with a CIS country background (Mansoor and Quillin 2006, Rodriguez Rios 2006).

ship. This makes it obviously easier for economic migrants to travel to European Union countries.

Economic and network arguments point to a considerable emigration pressure in the region under consideration; while this pressure is generally not constrained by laws of sending countries, migration movements are severely restricted by legal measures on the part of most receiving states. Particularly migrations into the European Union are restrained by policies which control the inflow of (labour) migrants, for example in the context of bilateral contracts on labour movements. Nevertheless, labour migrants from former CIS countries can be expected to enter or work illegally in economically better off countries, as long as basic migration incentives persist. In this context migration networks and agencies are assumed to play a decisive role in fostering movements into states that close their borders towards immigrants.

## 5. Data description

### *Data*

We use quantitative data from Armenia, Belarus, Georgia, Moldova and Ukraine which were collected in a multi-stage sampling framework by the INTAS project (ethnosurvey). The questionnaire was identical across countries. In each country, several regions were selected to conduct approximately 400 household interviews, summing up to 2,003 households in the sample. Households were sampled according to probability of inclusion in the sample proportional to size (PPS) and are representative for sub-regions. The sample was restricted to adults younger than 76 years.

The survey covers information on household and individual specific characteristics, on stays abroad and destinations between 2004 and 2006, on personal networks, on investments into human capital transferability as well as on future migration plans. Migrants in our sample are persons who have been abroad at least once for at least 3 month but have returned to their country of origin after the last trip. Therefore it has to be kept in mind that our definition of migration is restricted to short-term migration and that our results cannot be generalized to various types of movements.

### *Dependent variables*

A variable overview and descriptive statistics are given in Table 2. The first seven variables are the dependent variables used in the multivariate regression analysis. The variable *migrate* indicates whether a person has been abroad between 2004 and 2006 for at least 3 consecutive months and has turned home since. Therefore it has to be kept in mind that our analysis is restricted to return

migrants and that determinants and patterns of migration for permanent emigrants may vastly differ. Nevertheless, the largest share of migrants in the post-Soviet space can be considered short-term migrants (Mansoor and Quillin 2006).

The destination of migration is measured as discrete variables covering the destinations Western Europe including the new EU members (EU-27), Russia (which is by far the most important recipient country of the Former Soviet Union) and other overseas destinations (e.g. USA, Canada, and Japan). Migration duration is cardinally measured in month. For the whole sample, the mean is at half a month, but the average of the true migration duration ranges between five and ten months in the different countries when accounting for migrants only (Table 5).

### *Independent variables*

The independent variables used in the analysis comprise demographic information such as gender, marital status, age. To account for household specific conditions which might prevent or hamper migration (e.g. the presence of small children or elderly persons above 75) we include dummy variables. Education is included as a proxy for general human capital. We create three educational categories and include *lower education* (no secondary education) and *university* degree into the regressions. The majority category of having finished secondary education is being omitted from the regressions as base category. The next two variables are proxies for social networks in both Western and Eastern destinations and indicate whether a person has a potentially supporting friend in either or both of these destinations. *Westfriend* indicates having a personal network to a country of the EU-27 while *russfriend* means having social contacts with people in Russia. Since especially older people may have networks to a broad array of countries in the Former Soviet Union due to Soviet work experience and military service, networks to several countries of the Former Soviet Union may exist. Nevertheless, Russia is the most likely destination country in terms of economic advances why we decide to restrict the network variable to Russian friends. The following two variables are linked to human capital, as they describe knowledge of a *western language*<sup>6</sup> and investments into improving the transferability of skills between the country of origin and country of destination (e.g. training courses). The latter (*INVEST*) is a binary variable taking the value of unity if the respondent has participated in language courses, courses for qualification improvement or studies on the life conditions in the country of

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<sup>6</sup> We do only consider non-Slavonic languages (English, Spanish, Italian, German, Portuguese, French, Greek and Norwegian were the languages known by respondents) and are aware of the fact, that e.g. speaking Polish might by no means be less useful human capital. However, different language distances make it difficult to disentangle the true level of knowledge.

prospective residence. Our survey considers only human capital acquired prior to migration. The last variables in Table 2 are controls for settlement type and country fixed effects.

## 6. Methodology

To estimate the determinants of migration of individual  $i$  we make use of a simple probit model of the following reduced form:

$$\Pr(p_i = 1) = X_i\beta + C_i\gamma + \varepsilon_i \quad (1)$$

where a normal distribution is assumed for the outcome variable and the error is orthogonal to the explanatory variables  $X$  including human capital transferability an networks as well as controls  $C$ . A utility maximizing individual will chose migration if the costs (transportation as out-of pocket costs as well as psychological costs) are offset by the economic gain (the expected wage in destination minus the foregone earnings at home). As noted before, investments into human capital transferability are costly prior to the move, but they tend to reduce the costs post-migration. Besides, they increase the expected wage and/or the propensity to get a job at a given wage. After the investment has taken place, the costs become sunk, so we expect these investments to foster migration. Above, *INVEST* could also proxy how serious individuals were about their migration plans in the past.

The choice of migration destination can be easily captured in the framework of utility maximization. Person  $i$  will chose migration destination  $j$  if  $U_{ij} > U_{il}$  for  $j \neq l$ . Utility of individual  $i$  can be split into an observable and an unobservable part:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (2)$$

To analyze migration destinations we estimate a conditional logit model in which an individual is faced with the option to either migrate to the EU, to the RUSSIA, to overseas or not to migrate at all. It is important that this discrete set of choices satisfies the Independence from Irrelevant Alternatives assumption (IIA). The error term is extreme value distributed and iid, i.e. not correlated across choices. The probability of an individual choosing destination  $j$  can be notated as follows:

$$\Pr(Y_i = j) = \frac{\exp(x'_{ij}\beta)}{\sum_{j=1}^J \exp(x'_{ij}\beta)} \quad (3)$$

where  $x$  represents explanatory variables, among which we assume personal networks to play a pronounced role as they lower the cost for migration.

Generally, the IIA assumption is rather restrictive, since changes in the characteristics of one destination may distort the migration choice. Nevertheless, we use a small number of destinations which relaxes restrictivity a bit. Above, Train (2003) and Christiadi/Cushing (2007) have shown that violations of the IIA might not drive result insufficient if individuals' preferences are of interest rather than migration forecasting.

To understand the duration of migration we have to take into account that gains and costs from migration are not constant over time. The larger the out-of-pocket migration cost, the longer an individual has to work abroad to reach the "break-even" of the migration investment. On the other hand, psychological costs may rise steeply as time passes, especially in the presence of family in the country of origin. On the political side, visa regulations often limit the stay of a person abroad or force her to turn illegal by overstaying the visa. Estimating the determinants of migration duration with OLS would yield biased, inconsistent and inefficient estimates for count data (Long 1997). We make use of a non-linear model for which we assume a Poisson distribution. The probability that individual chooses  $y$  measures can be expressed as:

$$P(y|\mu) = \frac{e^{-\mu} \mu^y}{y!} \quad (4)$$

The model is subject to the strict assumption of equidispersion of mean  $\mu$  and the variance of  $y$ . To investigate potential misspecification of the Poisson model, we estimate a negative binominal regression model where over dispersion (delta) is constant across observations (NBRM model). Another problem of the count data application is the potential bias through excess zeros. Many individuals have not made any migration experience over the preceding three years, thus exhibiting "zero" months of duration. However, the process producing zeros because of not migration may strongly differ from the process determining the counts of time abroad. What is necessary is a model which is capable of distinguishing between both processes. In applying a zero inflated negative binominal regression model (ZINB model), we introduce an inflation variable which is strongly associated with the production of zeros stemming from the absence of positive migration decision in the past. We argue that having another person with migration experience in the household does impact on the decision whether to migrate. However, migration duration should be almost uncorrelated since many exogenous factors such as employment opportunities and conditions abroad as well as visa regulations will prevent from perfectly aligning migration stays. Indeed, the pair wise correlation coefficient of having another migrant and the household and own migration duration is weak and insignificant exhibiting the necessary property for this instrument.

For several regressions we split the sample into urban and rural households. This is due to the fact that employment opportunities are scarce in rural areas of

the former Soviet Union and might thus lead to different determinants of migration patterns. Another distinctive feature we account for is different migration determinants for men and women. While the underlying assumption for the interpretation of the female dummy in the full sample regression is that gender is only a shift parameter, the split of the sample allows for qualitative differences in determinants of migration decisions. The presence of children, for example, is expected to impact in a different way on the decisions of men and women.

## 7. Results

### *Descriptive statistics*

A comparison of migration patterns can be seen from Table 3. The data reflect unweighted information. It is obvious that Belarus, Moldova and Ukraine are countries with high levels of past migration experiences above 10 percent, while migration is less common in Armenia and Georgia. Men tend to migrate about twice as often as women, in Armenia five times as often. Only in Georgia, women comprise the larger share of migrants. In all countries but Belarus, migration is a rural phenomenon.

In all of the countries except Ukraine, migration to Russia comprises the largest share of migration; the destination split between East and West is almost equal in Belarus. Men and women tend to choose similar destinations for all countries of origin, but the settlement type influences the destination decision differently across countries: While in Armenia rural migrants head for the EU, their urban counterparts migrate to Russia. The opposite holds for Moldova.

Table 5 reports migration durations exclusively for migrants. While Belarusians and Georgians spent on average five to six months abroad during the preceding 36 months, Armenians, Moldavians and Ukrainians went eight to ten months abroad. In the latter two countries, men and women stay about the same time away from home, while Georgian women spend more than twice as long abroad than their male counterparts. In Armenia and Belarus, male migrants spend substantially more time in the country of destination. The longest stays abroad (more than ten months) are performed by rural or male Armenians as well as Moldavians and Ukrainians in urban settlements.

In Table 4 we take a closer look at personal networks to both destinations (West and East) as well as to language knowledge and past investments into improved human capital transferability. Social networks to Russia are stronger than Western networks in Armenia and Belarus, but only marginally for the latter. In all three other countries, the networks to the West are much denser than to the East. Men's network ties to the East are stronger than women's and eastern networks exhibit a stronger gender bias than western networks (which are quite



equally distributed between sexes). International networking is higher for urban respondents which might be caused by scarcer communication facilities in rural areas. Notable exceptions are Belarus (Russian networks are rural) and Moldova (EU networks are rural). Self-reported Western language skills are especially strong in Belarus and Georgia, they are stronger among women and in urban settlements. The latter probably reflects better educational facilities and migration agencies in urban areas. Ex ante investments into human capital transferability are around 30 percent in Georgia, Moldova and Ukraine and much lower in Armenia and Belarus. However, the gender split shows that men tend to invest more prior to migration which might be a strategy to catch up with women's better language skills. Similarly, investments are higher in rural areas with the notable exception of Belarus (where facilities in rural areas are scarce) and Ukraine.

### *Multivariate regression results*

In the following section, we provide results for the multivariate regressions to characterize migration patterns, controlling for several factors influencing the migration decision. Table 6 presents marginal effects of eight regressions concerning the determinants of migration. All regressions have a reasonable fit. The first four regressions show that being a women and being above 50 years old strongly discourages migration. Also, a university degree lowers the propensity to migrate, while lower education weakly enhances migration. Children and being married play a surprisingly unimportant role in preventing migration. Only when restricting the sample to the high migration countries Belarus, Moldova and Ukraine, the presence of small children up to five years significantly reduces the propensity to migrate by five percent.

Networks do not seem to have a very strong impact on the migration decision. Only when restricting the sample to high migration countries and more so when considering only rural respondents, network contacts to Russia significantly increase the propensity to migrate. Potentially, weak "professional migration infrastructure" in rural areas leads people stronger to rely on personal interaction. Knowledge of a western language, however, is a positive determinant for migration. Likewise, having invested into improvements of human capital transferability fosters migration. When restricting the sample to urban vs. rural as well as male vs. female respondents, it becomes clear, that determinants of migration differ across space and gender: Being married, younger than 25 or older than 50 has a significant and much stronger effect in rural compared to urban areas. This can potentially indicate more traditional social roles in rural areas. Likewise, the effect of high or low education is stronger in rural settlement. Comparing the determinants for men and women exhibits gender specific pattern. Very young and older men are less likely to migrate as compared to their

female counterparts; young women are even especially likely to emigrate. This pattern might be explained by the demand structure for migrants abroad: While men mostly work in construction or agriculture, i.e. heavy labour, the highest demand for women labourers is in home caring and nursing which can be performed without any age restrictions. As expected, the presence of small children has an especially strong discouraging effect for women, but not for men. Being a university graduate discourages men from migration, potentially because they can find employment at home more easily than women. Education of women, on the contrary, does not play a significant role. As we learnt from Table 4, western language knowledge is more widespread among women, raising the migration propensity for those men who do speak a foreign language strongly.

We report the determinants of the destination choice in Table 7. The omitted base category for the estimation is the choice of no migration. Thus the coefficients have to be interpreted in comparison to the group without migration experience. In our context, the main interest lies in the comparison of the coefficients between the two main destinations for Eastern European migrants: the EU and Russia. It turns out that gender, age and education are strong determinants of the destination choice. Women are more likely to migrate to the EU than to Russia. In most age groups, migrants and non-migrants do not significantly differ, irrespective of the destination. However, older migrants prefer other post-Soviet countries and are extremely unlikely to migrate long distances, as e.g. to the USA or Canada which are captured in the “other” category. Also having school children or a person older than 75 in the household, reduces the propensity to migrate far distance. Education seems to play an important role in the choice of an Eastern destination only, but after controlling for western language skills, university graduates become less likely to migrate to Western Europe as well. We find that personal networks are more important in determining migration to the East with the expected positive coefficient for having Russian friends abroad. Networks to the West are outperformed by western language skills, which are an extremely important driving force for attracting people. In comparing countries of origin, we find that Armenia and Belarus are less likely to send migrants to the West, while individuals in Georgia are slightly less likely to go to Russia as compared to the EU. In these results we find a reflection of political orientation of the countries under consideration. Moldavians, however, are strongly biased towards migration to the East.

More details can be studied with separate estimations for men and women (results not shown). Highly educated men are especially unlikely to go to the EU or to Russia, while low education strongly fosters their choice of going to the East. This result strengthens the argument that young men often work in the construction sector, especially in Russia. The largest share of those men has rather low education. Lower educated and older women do not chose Western Europe as a destination. While for both sexes, language skills play a similarly important

role for choosing the Western destination, the impact of social networks seems especially strong on men. Having Russian friends significantly lowers the chance to migrate to the West or overseas, while it significantly increases the choice of Russia. For women, the impact of social networks is statistically not significant different from zero.

The determinants of the migration duration are reported in Table 8. All but the regression for the sub samples considering only women and urban residents, are plagued by over dispersion and excess zeros, thus making the estimation of a Zero inflated negative binominal regression model (ZINB) necessary. The remaining two regressions only suffer from over dispersion, while the Vuong test indicates no serious problems of excess zeros here. Thus we estimate Negative binominal regression models (NBREG). The interpretation of the coefficients is straightforward: The constant reports the average migration duration for a middle-aged (36 to 49 years), unmarried, male, Ukrainian migrant with secondary education who lives in urban areas and has no children. Potentially the constant may be downward biased since singles are underrepresented in our sample. Georgians and Belarussians stay about one month shorter abroad than the comparison group. Women, married individuals and university graduates migrate for shorter stays abroad, while older migrants and persons with a higher level of human capital transferability stay significantly longer. When splitting the sample along geographic and gender lines, it becomes clear that the duration reducing effect of being married only holds for women and rural respondents. In rural areas, young migrants tend to stay significantly shorter periods of time abroad. An interesting pattern arises for dependent population groups in the household: Small children significantly reduce the length of stay for men only, while having a dependent elderly in the household shortens the stay abroad for urban households. The first result is quite puzzling and requires further analysis, while the explanation for the latter could lie in the contribution of elderly persons to the income generation process of households. As a study on poverty in Ukraine revealed, pensioners tend to positively contribute to household incomes resulting in reduced propensities of facing economic hardship (Brück, Danzer et al. 2007). As a kind of “insurance” elderly might lower the necessity for earning money through migration as a stable stream of income is available.

### *Robustness checks*

In the following we deal with two potential sources of bias to our analysis: Pooling of countries and potential endogeneity of variables.

The first question which arises in a cross-country study concerns the issue of comparability. We use Chow tests to check whether pooling of observations from different countries is applicable. The tests do not indicate that determinants for migration decisions, destination and duration of migration differ a

great deal between countries<sup>7</sup>. Thus we feel safe with the implemented country fixed effects in our analysis which have to be interpreted as shift parameters.

Estimating the effect of personal networks on the migration destination has a serious caveat: Since we cannot observe an individual's whole migration experience, it might be the case that personal networks exactly exist *because of* migration experiences prior to our period of analysis. To test whether our results might be biased as a result of network endogeneity, we make use of the approach proposed by Rivers and Vuong (1988). As in all tests of endogeneity we first have to find convincing instruments. We decide to instrument both friendship networks to the EU and to Russia. Investments into human capital transferability are a priori investments, but language skills could be endogenous as well. For that reason, we also instrument the knowledge of a western language. Our instruments are geography based as they take the average regional density of networks and of language knowledge, respectively, multiplied by household size. The rationale behind these instruments is the following: In regions with many people connected abroad, my potential access to their helping hand is larger. Another potential instrument for friendship network to the East is being orthodox.

Table 9a shows that all instruments have the desired properties: They are highly correlated with the potentially endogenous regressor but uncorrelated with the dependent variable. Table 9b reports the z-statistics of the second stage for the predicted first stage residuals. In the Rivers-Vuong approach this statistic can be interpreted as a simple test of the exogeneity hypothesis of the instruments. In case the statistic shows a certain level of significance, the regressors can be assumed to be endogenous and require the use of instrumental variables. As becomes clear from the table, both networks should be instrumented in the estimation of the Western destination, while the estimation of the Eastern destination is plagued by endogeneity to a much lesser extent. Language does not seem to exhibit any endogeneity problem. When instrumenting both destination equations, the Wald test of exogeneity failed to reject the null for exogeneity of networks in case of migration to the Eastern destination. This can be interpreted as some confirmation that endogeneity plays less a role for this migration process. Thus we present only results for the simple probit and IV probit for migration to the West in Table 9c. The qualitative results are similar in both equations, but we obviously lose precision in the IV estimation. Interestingly, after accounting for endogeneity, the positive effect of western friends for westward migration vanishes, while the discouraging effect of eastern networks remains strong.

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<sup>7</sup> Statistics not shown.

## 8. Summary and Policy Implications

Our paper has explored migration patterns in Eastern Europe in terms of the migration decision, destination and duration of past migration experiences and future intentions to migrate.

Among the important determinants to migrate are individual demographic characteristics and household conditions. Two results are noteworthy by international standards: the surprisingly low importance of the presence of young children on the migration decisions and the high share of older migrants. Human capital and networks rank especially prominent in determining patterns of economic migration and lead us to the conclusion of increasing importance of short term migration for the countries under considerations, as migration networks rapidly develop and human capital becomes better transferable across space. Moldova, however, has already extremely high levels of migration while Belarus is more strictly regulated. Much depends on the economic performance of Eastern European countries, which directly impacts on the migration decision in the form of push factors. An examination of the relationship between poverty and migration was beyond the scope of this paper. However, we will turn to this important field in our future research.

Several policy implications can be drawn from our analysis, both for the countries of origin and the countries of destination. For Eastern European countries, an important insight is that many determinants of migration do not greatly differ from what is observed in other parts of the world. In recent years, personal networks have been established, which make potential migrants better informed and thus less risk-exposed as concerns their experience abroad. Also, the threat of human trafficking, a topic beyond the scope of this paper, can be most efficiently prevented by established links between country of origin and destination and by designing cost-reducing migration schemes.

Fears of brain drain have not been substantiated in our analysis<sup>8</sup>. Migrants come from various educational backgrounds and many already invest ex ante into the transferability of human capital to the destination region, e.g. by learning a foreign language. This finding indicates that migration can be treated as an investment made by individuals. The role of human capital seems to be well understood by migrants; the investment pays off a double (private and social) dividend: First, for the migrant who improves personal human capital to earn higher incomes and, second, for the countries of origin through increasing levels of education and skills. These results provide tentative and indirect support for the potential of brain gain in migrant sending countries.

The major back draw for migrant sending countries lies in the high potential for social problems in families. As noted above, the presence of children does not

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<sup>8</sup> However, it should be noted again that we do not consider permanent migration.

prevent from migration. Social policy has to be aware of these detrimental effects which are likely to result in high numbers of social orphans, as observed in the case of Ukraine in recent years<sup>9</sup>.

For the countries of destination we will restrict ourselves to two major implications for the European Union which received high importance in the political debate. The first concerns fears of immigration from Eastern European countries. Despite focussing on short term migration only, we want to stress that migration is economically motivated and that migrants prepare and invest into human capital transferability to get employment in the EU. Permanent immigration and social benefit abuse may be weak objectives. Second, the educational background of migrants coming to the EU is quite low. Most likely, highly qualified workers, who the EU increasingly intends to attract, do prefer other destinations. Potential reasons may be the rather immigration opposing political culture in Europe (as e.g. compared to the USA), strict regulations on visa issuing and on the acceptance of educational certificates and so forth. However, our analysis also clearly reveals the importance of the language barrier which makes Russia an attractive destination for many Eastern Europeans.

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<sup>9</sup> We thank Natalia Astapova from the UNICEF office Kiev for this information.

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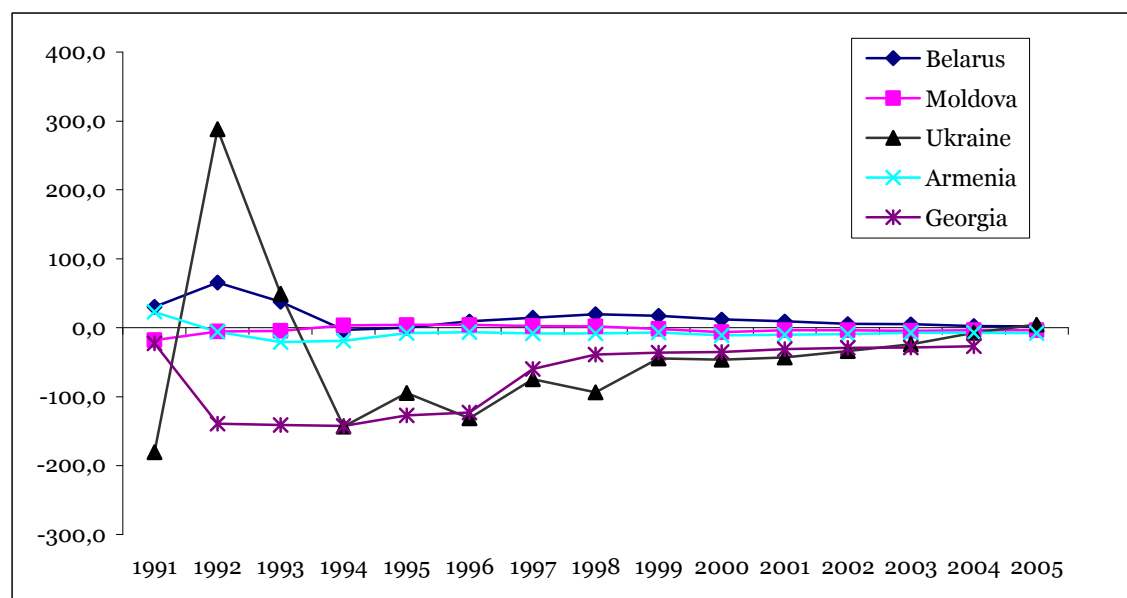
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## Appendix

Figure 1: Net migration: Armenia, Georgia, Belarus, Moldova, Ukraine (1991-2005)



Source: Transmonee Database

Table 1: GDP per capita (PPP, 2000 constant US \$), Armenia, Belarus, Georgia, Moldova, Ukraine, Russia, various European Union countries

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Germany	23,257	23,631	24,118	24,591	25,342	25,618	25,579	25,521	25,945	26,210
Italy	23,222	23,648	23,981	24,438	25,302	25,741	25,750	25,559	25,578	25,381
Spain	19,057	18,742	20,555	21,420	22,312	22,844	23,119	23,421	23,757	24,171
Portugal	15,653	16,254	16,960	17,550	18,147	18,392	18,397	18,064	18,172	18,158
Czech Rep.	14,651	14,559	14,461	14,672	15,222	15,671	16,004	16,579	17,269	18,273
Poland	8,578	9,179	9,632	10,070	10,548	10,723	10,878	11,307	11,913	12,318
Armenia	1,932	2,019	2,183	2,269	2,417	2,663	3,029	3,468	3,846	4,846
Belarus	3,578	4,003	4,360	4,524	4,800	5,045	5,323	5,728	6,416	7,044
Georgia	1,594	1,786	1,863	1,939	1,997	2,117	2,259	2,536	2,713	2,993
Moldova	1,381	1,408	1,320	1,279	1,310	1,395	1,509	1,614	1,739	1,868
Ukraine	3,864	3,782	3,744	3,772	4,035	4,450	4,728	5,215	5,892	6,092
Russia	6,173	6,277	5,961	6,368	7,005	7,380	7,765	8,376	9,021	9,647

Source: World Bank, World Development Indicators 07

Table 2: Variable overview

variable	N	mean	sd	min	max
migrate	2003	0.081	0.273	0	1
west (EU27)	2003	0.026	0.161	0	1
russia	2003	0.041	0.198	0	1
otherdest	2003	0.014	0.117	0	1
duration	2003	0.643	2.930	0	36
female	2003	0.636	0.481	0	1
married	2003	0.672	0.469	0	1
age1725	2003	0.219	0.414	0	1
age2635	2003	0.249	0.432	0	1
age3649	2003	0.372	0.484	0	1
age5076	2003	0.158	0.365	0	1
kid05	2003	0.188	0.391	0	1
kid510	2003	0.179	0.384	0	1
elderly75	2003	0.076	0.265	0	1
loweredu	2003	0.049	0.217	0	1
secondary	2003	0.639	0.480	0	1
university	2003	0.311	0.463	0	1
westfriend	2003	0.105	0.307	0	1
russfriend	2003	0.049	0.217	0	1
westlanguage	2003	0.336	0.472	0	1
INVEST	2003	0.249	0.433	0	1
urban	2003	0.686	0.464	0	1
rural	2003	0.314	0.464	0	1
armenia	2003	0.200	0.400	0	1
belarus	2003	0.200	0.400	0	1
georgia	2003	0.201	0.401	0	1
moldova	2003	0.200	0.400	0	1
ukraine	2003	0.200	0.400	0	1

Source: INTAS; authors' calculations

Table 3: Migration patterns and migration intentions

Country of origin		Total	women	men	urban	rural
Armenia	migration 2004-06	3.2%	1.4%	7.6%	3.1%	4.1%
	- destination EU27	0.7%	0.4%	1.7%	0.3%	2.7%
	- destination Russia	2.3%	0.7%	5.9%	2.5%	1.4%
Belarus	migration 2004-06	10.2%	7.4%	14.6%	11.7%	4.7%
	- destination EU27	4.3%	3.3%	5.7%	5.1%	1.2%
	- destination Russia	5.0%	2.1%	9.5%	5.4%	2.4%
Georgia	migration 2004-06	1.7%	1.9%	1.4%	1.7%	2.0%
	- destination EU27	1.0%	1.1%	0.7%	1.0%	1.0%
	- destination Russia	0.2%	0.4%	0.0%	0.0%	1.0%
Moldova	migration 2004-06	13.5%	10.3%	18.0%	12.1%	14.4%
	- destination EU27	3.0%	1.7%	4.8%	3.2%	2.9%
	- destination Russia	9.7%	7.7%	12.6%	8.9%	10.3%
Ukraine	migration 2004-06	11.7%	8.7%	16.9%	10.6%	14.3%
	- destination EU27	4.3%	2.8%	6.8%	4.0%	4.8%
	- destination Russia	3.5%	2.4%	5.4%	3.3%	4.0%
Total	migration 2004-06	8.1%	5.7%	12.2%	7.3%	9.9%
	- destination EU27	2.6%	1.8%	4.1%	2.6%	2.7%
	- destination Russia	4.1%	2.5%	6.8%	3.5%	5.4%
N		2003	1273	730	1375	628

Source: INTAS; authors' calculations

Table 4: Personal networks and human capital transferability

Country of origin		Total	women	men	urban	rural
Armenia	EU friend	21.8%	19.9%	26.3%	23.0%	16.2%
	Russian friend	36.3%	33.0%	44.1%	38.7%	25.7%
	Western language	22.2%	23.8%	18.6%	24.5%	12.2%
	HC INVESTment	9.5%	6.4%	16.9%	8.6%	13.5%
Belarus	EU friend	21.0%	21.1%	20.9%	24.1%	9.4%
	Russian friend	24.5%	21.5%	29.1%	22.2%	32.9%
	Western language	47.0%	53.7%	36.7%	54.0%	21.2%
	HC INVESTment	20.3%	19.4%	21.5%	23.5%	8.2%
Georgia	EU friend	35.0%	35.6%	33.8%	38.9%	23.0%
	Russian friend	21.3%	23.1%	18.0%	22.1%	19.0%
	Western language	40.2%	47.0%	27.3%	46.5%	21.0%
	HC INVESTment	34.2%	31.1%	40.3%	26.7%	57.0%
Moldova	EU friend	57.5%	58.8%	55.7%	51.0%	61.7%
	Russian friend	26.5%	22.7%	31.7%	26.8%	26.3%
	Western language	24.5%	26.6%	21.6%	27.4%	22.6%
	HC INVESTment	30.0%	30.0%	29.9%	21.7%	35.4%
Ukraine	EU friend	34.3%	32.9%	36.5%	36.5%	29.4%
	Russian friend	16.2%	15.5%	17.6%	19.7%	8.7%
	Western language	34.0%	34.9%	32.4%	36.9%	27.8%
	HC INVESTment	30.5%	29.4%	32.4%	32.5%	26.2%
N		2003	1273	730	1375	628

Source: INTAS; authors' calculations

Table 5: Average migration duration in month (among migrants only)

Country of origin	Total	women	men	urban	rural
Armenia	8.3	2.5	10.9	6.3	15.0
Belarus	4.6	3.7	5.3	4.7	4.0
Georgia	5.7	6.8	3.0	6.0	5.0
Moldova	9.6	9.3	9.8	10.4	9.2
Ukraine	9.1	9.2	9.0	10.1	7.4
N	162	73	89	100	62

Source: INTAS; authors' calculations

Table 6: Probit Regressions: determinants of migration

	(1) baseline model	(2) with networks	(3) with HC	(4) Bel, Mol, Ukr	(5) only rural	(6) non rural	(7) men	(8) women
female	-0.049 (4.36)***	-0.047 (4.28)***	-0.045 (4.38)***	-0.072 (3.89)***	-0.049 (2.46)**	-0.050 (3.95)***		
married	-0.018 (1.26)	-0.017 (1.24)	-0.008 (0.59)	-0.008 (0.33)	-0.055 (1.91)*	0.000 (0.00)	0.002 (0.05)	-0.021 (1.64)
age1725	-0.001 (0.09)	-0.003 (0.21)	-0.018 (1.26)	-0.031 (1.15)	-0.065 (2.41)**	0.008 (0.44)	-0.082 (2.71)***	0.029 (1.71)*
age2635	-0.004 (0.32)	-0.005 (0.34)	-0.009 (0.72)	-0.005 (0.21)	-0.040 (1.63)	0.006 (0.40)	-0.014 (0.49)	-0.003 (0.20)
age5076	-0.041 (2.94)***	-0.040 (2.86)***	-0.028 (2.18)**	-0.066 (2.68)***	-0.049 (2.07)**	-0.027 (1.68)*	-0.060 (2.40)**	-0.027 (1.89)*
kid05	-0.023 (1.59)	-0.024 (1.72)*	-0.020 (1.53)	-0.050 (2.11)**	-0.035 (1.32)	-0.018 (1.24)	-0.026 (0.87)	-0.025 (2.05)**
kid510	-0.013 (0.90)	-0.012 (0.88)	-0.012 (0.96)	-0.034 (1.46)	0.037 (1.29)	-0.025 (1.70)*	-0.042 (1.68)*	0.005 (0.37)
elderly75	-0.007 (0.32)	-0.007 (0.34)	-0.006 (0.33)	-0.023 (0.57)	0.037 (1.01)	-0.028 (1.12)	-0.001 (0.03)	-0.009 (0.45)
loweredu	0.033 (1.41)	0.032 (1.41)	0.041 (1.80)*	0.075 (1.94)*	0.064 (1.86)*	-0.003 (0.08)	0.057 (1.34)	0.028 (1.13)
university	-0.021 (1.80)*	-0.022 (1.91)*	-0.030 (2.78)***	-0.057 (2.68)***	-0.053 (1.99)**	-0.024 (1.99)**	-0.090 (4.14)***	-0.004 (0.30)
westfriend		0.013 (1.14)	-0.003 (0.33)	0.004 (0.21)	-0.000 (0.00)	0.007 (0.56)	0.013 (0.64)	0.005 (0.45)
russfriend		0.015 (1.23)	0.018 (1.58)	0.043 (1.93)*	0.053 (2.03)**	0.006 (0.43)	0.036 (1.50)	0.002 (0.20)
westlanguage			0.032 (2.73)***	0.086 (3.85)***	0.079 (2.61)***	0.036 (2.80)***	0.113 (3.91)***	0.021 (1.74)*
INVEST			0.094 (7.02)***					
rural	-0.004 (0.32)	-0.003 (0.25)	-0.002 (0.23)	0.002 (0.08)			-0.001 (0.03)	0.006 (0.47)
armenia	-0.056 (4.27)***	-0.057 (4.25)***	-0.038 (2.96)***		-0.062 (2.63)***	-0.044 (3.02)***	-0.042 (1.43)	-0.047 (3.77)***
belarus	-0.015 (1.14)	-0.014 (1.08)	-0.008 (0.62)	-0.030 (1.41)	-0.058 (2.25)**	-0.007 (0.46)	-0.008 (0.31)	-0.022 (1.92)*
georgia	-0.072 (5.09)***	-0.072 (5.14)***	-0.065 (5.28)***		-0.070 (2.55)**	-0.062 (4.21)***	-0.105 (3.62)***	-0.048 (3.99)***
moldova	0.001 (0.09)	-0.003 (0.23)	0.004 (0.29)	-0.002 (0.08)	0.003 (0.11)	-0.005 (0.27)	0.001 (0.02)	-0.005 (0.39)
Observations	2003	2003	2003	1200	628	1375	730	1273
Pseudo R-squared	0.10	0.10	0.16	0.07	0.15	0.12	0.13	0.13
Test: kid05=kid510=0	98.499	101.111	162.137	59.217	47.446	77.982	58.389	70.575

Robust z statistics in parentheses; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%  
Source: INTAS; authors' calculations

Table 7: Multinomial logit Regression of migration destination

	baseline model			with networks			with language		
	EU	Russia	other	EU	Russia	other	EU	Russia	other
female	-0.542 (2.15)**	-0.997 (4.10)***	-0.173 (0.19)	-0.550 (2.18)**	-1.015 (4.13)***	-0.184 (0.21)	-0.744 (2.83)***	-0.992 (3.99)***	-0.154 (0.17)
married	-0.492 (1.59)	0.068 (0.20)	-0.775 (1.36)	-0.483 (1.54)	0.052 (0.15)	-0.826 (1.58)	-0.274 (0.84)	0.028 (0.08)	-0.842 (1.55)
age1725	-0.123 (0.34)	-0.105 (0.28)	1.528 (1.52)	-0.125 (0.34)	-0.154 (0.40)	1.465 (1.38)	-0.673 (1.67)*	-0.090 (0.24)	1.591 (1.35)
age2635	-0.088 (0.26)	-0.065 (0.19)	1.275 (1.17)	-0.116 (0.34)	-0.025 (0.08)	1.168 (0.99)	-0.229 (0.61)	-0.015 (0.05)	1.230 (0.99)
age5076	-1.016 (2.08)**	-0.789 (1.92)*	-32.839 (30.88)***	-1.010 (2.06)**	-0.763 (1.85)*	-32.721 (31.94)***	-0.860 (1.76)*	-0.772 (1.87)*	-30.749 (30.83)***
kid05	-0.537 (1.25)	-0.317 (0.91)	-0.414 (0.44)	-0.562 (1.31)	-0.313 (0.92)	-0.402 (0.45)	-0.594 (1.32)	-0.313 (0.93)	-0.462 (0.49)
kid510	-0.165 (0.45)	-0.285 (0.85)	-33.678 (56.11)***	-0.137 (0.37)	-0.285 (0.84)	-33.385 (56.16)***	-0.043 (0.11)	-0.283 (0.84)	-31.379 (54.15)***
elderly75	-0.514 (0.83)	0.362 (0.75)	-33.078 (62.50)***	-0.494 (0.80)	0.377 (0.78)	-32.979 (66.16)***	-0.428 (0.69)	0.360 (0.74)	-30.963 (58.25)***
loweredu	-0.557 (0.76)	0.671 (1.94)*	1.617 (0.86)	-0.510 (0.70)	0.669 (1.93)*	1.610 (0.88)	-0.272 (0.36)	0.659 (1.91)*	1.569 (0.85)
university	-0.186 (0.65)	-0.906 (2.43)**	0.938 (1.15)	-0.203 (0.70)	-0.936 (2.53)**	0.843 (1.18)	-0.685 (2.18)**	-0.868 (2.23)**	0.948 (1.27)
rural	0.142 (0.55)	-0.131 (0.54)	-0.491 (0.77)	0.186 (0.71)	-0.149 (0.61)	-0.423 (0.76)	0.408 (1.46)	-0.171 (0.70)	-0.506 (0.98)
westfriend				0.632 (1.81)*	-0.183 (0.46)	0.681 (0.73)	0.466 (1.32)	-0.165 (0.41)	0.690 (0.73)
russfriend				0.049 (0.08)	0.973 (2.51)**	-33.647 (58.48)***	0.050 (0.08)	0.954 (2.47)**	-31.680 (54.16)***
westlanguage							1.932 (6.14)***	-0.232 (0.75)	-0.459 (0.60)
armenia	-2.331 (3.86)***	-0.497 (1.12)	0.149 (0.10)	-2.332 (3.89)***	-0.469 (1.06)	0.071 (0.05)	-2.090 (3.55)***	-0.499 (1.13)	-0.003 (0.00)
belarus	-0.503 (1.73)*	0.351 (0.96)	-0.530 (0.39)	-0.470 (1.60)	0.381 (1.04)	-0.571 (0.42)	-0.592 (1.91)*	0.388 (1.07)	-0.514 (0.39)
moldova	-0.930 (2.73)***	0.888 (2.64)***	0.546 (0.32)	-1.060 (2.93)***	0.859 (2.48)**	0.385 (0.21)	-0.980 (2.66)***	0.843 (2.41)**	0.420 (0.23)
georgia	-2.229 (4.12)***	-2.527 (2.44)**	0.185 (0.17)	-2.242 (4.19)***	-2.579 (2.48)**	0.190 (0.17)	-2.196 (4.05)***	-2.590 (2.49)**	0.195 (0.18)
Constant	-1.437 (3.57)***	-2.346 (5.16)***	-6.034 (3.99)***	-1.523 (3.76)***	-2.368 (5.10)***	-5.948 (4.12)***	-2.362 (5.35)***	-2.313 (4.85)***	-5.850 (4.18)***
Observations		2003			2003			2003	
Ps R-squared		0.12			0.13			0.16	

Robust z statistics in parentheses; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Source: INTAS; authors' calculations

Table 8: ZINB and NBREG model: migration duration

	ZINB baseline model	ZINB extended model	ZINB men	NBREG women	NBREG urban	ZINB rural
female	-0.281 (1.60)	-0.384 (2.00)**			-1.431 (5.08)***	-0.179 (0.82)
married	-0.438 (2.12)**	-0.465 (2.18)**	0.070 (0.25)	-0.950 (2.46)**	-0.360 (0.95)	-0.626 (2.29)**
age1725	-0.261 (1.11)	-0.406 (1.72)*	-0.418 (1.24)	0.163 (0.35)	-0.057 (0.13)	-0.705 (2.51)**
age2635	-0.008 (0.04)	0.069 (0.31)	0.512 (2.11)**	-0.278 (0.55)	0.523 (1.20)	-0.696 (2.58)***
age5076	0.488 (1.80)*	0.575 (2.08)**	0.062 (0.22)	-0.530 (1.11)	-0.140 (0.35)	0.306 (0.92)
kid05	-0.196 (0.79)	-0.176 (0.69)	-0.776 (2.78)***	-0.016 (0.03)	-0.385 (0.85)	-0.412 (0.98)
kid510	0.448 (1.77)*	0.367 (1.42)	-0.350 (1.18)	0.118 (0.25)	-0.511 (1.11)	0.256 (0.91)
elderly75	0.315 (1.04)	0.024 (0.08)	0.236 (0.80)	-0.551 (1.03)	-1.102 (2.54)**	0.210 (0.46)
loweredu	-0.421 (1.63)	-0.218 (0.81)	0.156 (0.58)	0.229 (0.38)	-0.144 (0.24)	-0.150 (0.64)
university	-0.303 (1.37)	-0.390 (1.74)*	-1.144 (3.29)***	-0.056 (0.14)	-0.660 (1.72)*	0.575 (1.57)
westlanguage		0.428 (2.58)***	0.685 (3.43)***	0.743 (2.34)**	0.635 (1.94)*	0.590 (3.03)***
INVEST		0.509 (2.72)***	0.143 (0.82)	2.259 (6.66)***	2.307 (6.67)***	0.024 (0.14)
rural	-0.220 (1.27)	-0.211 (1.22)	-0.371 (2.00)**	-0.168 (0.42)		
armenia	-0.722 (1.92)*	-0.362 (0.95)	0.449 (1.25)	-2.516 (4.37)***	-0.605 (1.31)	0.389 (0.61)
belarus	-0.826 (3.85)***	-0.749 (3.45)***	-0.549 (2.27)**	-1.454 (2.65)***	-0.568 (1.37)	-0.373 (0.86)
moldova	0.186 (0.93)	0.329 (1.59)	0.275 (1.30)	0.393 (0.76)	0.826 (1.64)	0.741 (3.06)***
georgia	-0.929 (1.93)*	-1.208 (2.68)***	-2.476 (4.03)***	-2.851 (6.03)***	-1.910 (4.02)***	-0.603 (0.83)
Constant	2.664 (10.51)***	2.160 (7.76)***	1.908 (5.39)***	-0.739 (1.48)	-0.159 (0.30)	2.055 (6.62)***
Observations	2003	2003	730	1273	1375	628
Zero observations	1839	1839	639			565
Likelihood ratio test	329.591	285.449	97.739	316.43	269.20	37.933
Voung test	3.286	1.654	4.194			3.257
sig.	0.000	0.049	0.000			0.003
R2_p				0.074	0.059	

Absolute value of z statistics in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Source: INTAS; authors' calculations



Table 9a: Correlation matrices for instrumental variables

	iv_westfriend	westfriend	west
iv_westfriend	1.0000		
westfriend	0.2878*	1.0000	
west	-0.0259	0.0725*	1.0000

	iv_russfriend	russfriend	russia
iv_russfriend	1.0000		
russfriend	0.1832*	1.0000	
russia	-0.0162	0.0962*	1.0000

	iv_westlanguage	westlanguage	west
iv_westlanguage	1.0000		
westlanguage	0.2195*	1.0000	
west	0.0197	0.1857*	1.0000

\* significant at 5%

Source: INTAS; authors' calculations

Table 9b: Estimated first stage residuals for the Rivers-Vuong approach (endogeneity test)

	iv_westfriend	iv_russfriend	iv_westlanguage
destination West	-1.79 (0.074)*	-2.52 (0.012)**	-0.02 (0.983)
destination Russia	-1.82 (0.070)*	0.48 (0.628)	0.46 (0.647)

\* significant at 10%; \*\* significant at 5%

Source: INTAS; authors' calculations

Table 9c: IV Regression for migration to EU

	(1) Probit	(2) IV Probit (Second stage)
female	-0.014 (2.33)**	-0.398 (2.71)***
married	-0.012 (1.60)	-0.183 (1.04)
age1725	-0.001 (0.12)	0.271 (1.05)
age2635	-0.003 (0.35)	-0.020 (0.10)
age5076	-0.017 (2.31)**	-0.642 (2.44)**
kid05	-0.011 (1.49)	-0.344 (1.62)
kid510	-0.001 (0.11)	-0.119 (0.60)
elderly75	-0.003 (0.30)	-0.060 (0.20)
loweredu	-0.005 (0.42)	-0.014 (0.04)
university	-0.006 (0.92)	-0.061 (0.33)
westfriend	0.019 (2.92)***	-0.311 (0.28)
russfriend	-0.018 (2.79)***	-3.214 (2.32)**
rural	0.004 (0.58)	-0.049 (0.30)
armenia	-0.030 (4.41)***	-0.534 (1.43)
belarus	-0.008 (1.20)	-0.044 (0.18)
georgia	-0.030 (4.45)***	-0.879 (3.45)***
moldova	-0.021 (3.55)***	-0.094 (0.24)
Constant		-0.303 (0.53)
Observations	2003	2003
Pseudo R-squared	0.13	
Wald test of exogeneity: chi2(2)		5.28
p-value		0.071

Robust z statistics in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Note: for migration with destination EU27, we instrument friendship networks to the EU and Russia with *iv\_westfriend*, *iv\_russfriend*, and *orthodox*. As a robustness check, we use the instrument *ethnic russian* and find similar results.

Source: INTAS; authors' calculation.