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## Mass migration and seasonality: evidence on Moldova's labour exodus

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Working Paper No. 435

**Mass Migration and Seasonality  
Evidence on Moldova's Labour Exodus**

by

Dennis Görlich and Christoph Trebesch

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# Mass Migration and Seasonality Evidence on Moldova's Labour Exodus

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This version: May 2006

## *Abstract*

This paper identifies the determinants and patterns of mass migration in Moldova – a country in which migration has become the dominant socioeconomic phenomenon in a period of less than 8 years. Special emphasis is placed on seasonal migration, which has become increasingly popular in many Eastern European countries. Our findings indicate that poverty is a main push factor of migration decisions. Additionally, network effects and migration experience appear to be crucial for Moldovan migration flows. Concerning the choice of seasonal vs. permanent migration, we find that neither young dependents in the household nor marital status seem to influence the migrant's decision of whether to leave seasonally or permanently. The main group of seasonal migrants are less educated men from rural areas.

JEL classification: F22, J61, O15, R23

Keywords: Migration decision, Seasonal migration, Poverty, CIS, Moldova

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# 1. INTRODUCTION

Migration is becoming an ever more important factor for the socioeconomic situation of sending and receiving countries. In the last decades, a rich empirical literature on the causes and consequences of migration in many developing countries has emerged.<sup>1</sup> However, until today, migration in Eastern Europe has not received a lot of attention in empirical research - especially when it comes to seasonal migration flows.<sup>2</sup>

With an exceptionally high number of international migrants, the Republic of Moldova constitutes an interesting case study. Approximately one third of its economically active population is working abroad today (Cuc et al., 2005). As a result, the country is highly dependent on remittances. No matter how favourable the development of local economic conditions and political reforms will be in the future, migration and remittances are likely to remain a dominant, if not the single most important socioeconomic phenomenon in Moldova for a long time to come. It is therefore of crucial importance to policy-makers and economists to understand the determinants of migration in this country. To date, no quantitative research exists on the driving forces of migration in Moldova. Our study is a first attempt to fill this gap.

A distinguishing feature of this article is its strong focus on the seasonality of migration. As in many Eastern European countries, seasonal migration has become an increasingly important trend in Moldova. Similar to thousands of Poles crossing the border to engage as harvesters in Germany, many Moldovans work in Russia and other Eastern European countries as seasonal service migrants, mainly in the construction sector. According to the data at hand, more than 40 % of Moldova's international migrants are seasonal migrants, i.e. they leave "for a few months" only maintaining close ties and a steady residence in their country of origin. Given this high proportion, the case of Moldova appears particularly interesting to investigate the phenomenon of short-term international labour movements.

Concisely, we address the following research questions:

- (1) What are the general determinants of migration in Moldova?
- (2) What are the determinants of seasonal migration in particular?

The paper is organized as follows. In section 2 we briefly sketch the development of migration and remittances in the Republic of Moldova. Section 3 describes our empirical approach and

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<sup>1</sup> For an overview see De Haan (1999) or Rapoport and Docquier (2005).

<sup>2</sup> Exceptions include Kule et al. (2000), León-Ledesma and Piracha (2004), or Locher (2000).

provides a short overview on the literature. Section 4 describes the data set and variables used for the econometric estimations. In section 5 we will present and discuss our results. Section 6 concludes.

## 2. MIGRATION AND REMITTANCES IN MOLDOVA

Since the first significant wave of workers left the country after the regional economic crisis in 1998, migration has become a mass phenomenon in the Moldovan society. Today, people are leaving the country at an unprecedented scale. According to the Moldovan Department of Migration, the number of Moldovans working abroad is estimated to reach 600.000 workers by the end of 2004 (Cuc et al., 2005).<sup>3</sup> This is an impressive number, considering that migration is a relatively recent phenomenon in Moldova, and that its economically active population consists of only about 1.6 million people (Pyshkina, 2002).

Along with mass emigration, the inflow of remittances has shown very high growth rates. The total volume of remittances flowing into Moldova has increased considerably in the last years and has become a main engine of consumption-driven growth (Cuc et al., 2005). According to World Bank staff estimates, Moldova is ranked second worldwide among the countries with the highest share of international remittances in GDP (World Bank, 2005). Taking into account both formal and informal transfers, remittances are estimated to amount to 27,1% of GDP in 2004.

A recent report by the IMF underlines that Moldova's social and economic structure makes it a typical place for mass emigration (Cuc et al., 2005). Having been a relatively prosperous country, Moldova witnessed a sharp economic decline after independence in 1991, which exceeded that of other Soviet republics.<sup>4</sup> Since then Moldova's socioeconomic development has stayed behind other Central European countries or countries of the Commonwealth of Independent States (CIS) (see Hensel and Gudim, 2004, for an overview). It remains one of the poorest countries in Europe, with an economy based on agriculture and related industries. The country is small, landlocked and densely populated. At the same time it has a very large population living in rural and small town communities.

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<sup>3</sup> Note, that the total number of migrants cannot be precisely determined, Moldova still lacks adequate monitoring facilities and many of those that depart abroad for work do it illegally or with tourist visa. In contrast to the Migration Department, the Moldovan Department of Statistics and Sociology reports a number of 367,000 people working abroad in 2004 (cf. IMF, 2005), while unofficial estimates claim a migrant contingent of up to 800.000 people (see Munteanu, 2005).

<sup>4</sup> A main reason for the severity of Moldova's economic downturn has been the early secession of the Transdnistrian region, where most of the country's industrial industry and electricity generating capacity was situated in Soviet times. Until today, the frozen conflict in Transdnistria remains a major impediment to political and economic reform in Moldova.

Most of these countryside communities had monostructural local economies (including one-factory towns) and were heavily dependent on the economic ties with the former Soviet Union, which broke down after 1991. The excess labour resulting from the continuous economic downturn and the closure of main rural enterprises in the last decade could only partly be absorbed on a national level, leading to a decrease in labour participation rates and a strong increase in poverty rates, especially in small towns and in rural areas (IMF, 2004; Pyshkina, 2002). As a consequence, emigration from these communities has become a common feature in Moldova. While labour migrants in the early 1990ies were mainly from the urban population, the proportion of migrants from rural areas has strongly increased, with entire villages departing abroad (Pyshkina, 2002). Today, the share of migrants in the rural and urban population is claimed to be about the same, although the total number of migrants from rural areas is larger (Ghenecea and Gudumac, 2004).

Two main surveys on the patterns of international migration have been conducted only recently, providing detailed insights on the characteristics, destinations and remittance behaviour of Moldovan migrants (Ghenecea and Gudumac, 2004; CBS AXA, 2005). The two studies draw a clear picture about the profile of migrants. The large majority of migrants are men, married and young, i.e. in the age group between 21 and 40. As in the rest of Moldova's working population, most migrants have secondary education and 20-25% of them completed university. On average, male migrants are younger and carry out physical work in the construction and mechanical service sector, while female migrants, who tend to be older, engage mostly in housekeeping, health care, and social assistance.

As in other post-communist societies in Central and Eastern Europe, seasonal or temporary migration has become a dominant phenomenon in Moldova. The number of seasonal migrants is increasing even faster than the already high figures of permanent emigration. Most of Moldova's seasonal migrants work illegally abroad, many under dismal conditions. Due to their short stay in the host country and given their irregular status most migrants are in fact forced to accept relatively harsh working conditions (Okólski, 2004)

Concerning migration destinations, the overwhelming proportion of migrants, especially among the male ones, work in Russia (60 %). Other main migratory directions include EU countries with a spoken language similar to Moldavian (and Romanian), i.e. Italy (19%) and Portugal (6%), as well as other countries such as Cyprus, Turkey, Greece and Ukraine. Migrants that leave permanently tend to settle in Western countries, while most of the seasonal migrants go to Eastern European destinations. Note in this context, that an undisclosed number of Moldovans

were able to acquire a second, Romanian or Bulgarian passport after independence.<sup>5</sup> The possession of such foreign citizenship considerably lowers the cost and risks of international migration, especially towards the West.

### **3. REVIEW OF SOME RELATED STUDIES AND EMPIRICAL APPROACH**

There is a rich literature that attempts to identify the main push and pull factors of migration in a large number of developing countries. Prominent examples include Lucas and Stark (1985), Stark (1991), Carrington et al. (1996), Barham and Boucher (1998), Rozelle et al. (1999) or Mora and Taylor (2005).

Among the factors most relevant for the migration decision are network effects, which will be particularly emphasized in this study. A series of important migration studies such as Massey, Goldring, and Durand (1994), McKenzie and Rapoport (2004) or Munshi (2003) all find strong evidence for ‘herding’ or ‘family and friends’ effects in migration flows. In this paper, we include both family and community network variables in our estimations to assess in how far inter- and intra-household ties to other migrants affect migration decisions.

As mentioned above, this article has a special focus on seasonal migration. We define seasonal migration as a situation in which the migrant has left the country “seasonally, for a few months”.<sup>6</sup> In contrast to permanent migration, seasonal migration usually does not involve a change in residence so that the migrant can mitigate the risks of moving to a new environment. Accordingly, short-term migration can be an important coping strategy to poverty for those who are not able or willing to depart permanently or for large distances (Konseiga, 2005). By frequent returns home, the psychological and social costs of separation can be considerably reduced, an important advantage for young families with children. Additionally, the labour market effects in the source country are certainly less severe if large proportions of the migrants are seasonal. A seasonal migrant, who maintains closer ties to his community of origin, is less likely to be ‘lost forever’, compared to someone living abroad for longer periods of time. Moreover, seasonal migrants are usually not accompanied or followed by their family members. Instead, seasonal migrants tend to acquire specialized skills and save money abroad, thereby increasing the productivity of their activities at home and triggering positive spillover effects (León-Ledesma

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<sup>5</sup> The strong increase of Moldovans acquiring Romanian citizenship can be seen as a result of Romania’s ‘naturalisations policy’, which has been followed since 1990.

<sup>6</sup> The question if the migrant had intended to leave “seasonally, for a few months” was explicitly asked in the questionnaire and stood in contrast to longer-term/permanent migration intentions.



and Piracha, 2004).<sup>7</sup> Seasonal and permanent migration will thus have very different consequences both for labour exporting as for labour receiving countries. Hence, it is of crucial interest to find out which type of households choose for seasonal migration and which ones engage in longer-term or even permanent migration. However, very little systematic research has been devoted to this question.

Generally, despite the worldwide trend to seasonal migration, the determinants and consequences of this phenomenon are not well researched. In fact, micro level studies on international migration and remittances almost exclusively focus on long-term migration. Notable exceptions are Konseiga (2005) for Burkina Faso, Basok (2003) on seasonal labour flows from Mexico to Canada as well as a series of articles by Dustmann (1993, 1997, 1999 and 2000).

The main reason for the apparent literature gap is data constraints. As stated by Robert Lucas, seasonal or circular migration “is normally difficult to quantify, given the nature of census data. [...] As a result, only specialized surveys really permit systematic analysis of circular migration” (Lucas, 2003). The dataset used in this study is such a specialized survey, which allows identifying whether a household has seasonal or permanent migrants. This paper attempts to exploit this advantageous feature of the data, providing novel evidence on seasonal migration in Eastern Europe, where this type of labour movement is particularly widespread (León-Ledesma and Piracha, 2004).

Most of the micro level studies on the determinants of migration estimate decision models using some version of a binary or multivariate choice model. We estimate the general migration decision – both the general decision to migrate and the decision to migrate seasonally – in simple logit models using maximum likelihood estimation.

The logit models are of the usual form,

$$P(y = 1|X) = G(X\beta), \tag{1}$$

where  $y$  is either (1) the general migration decision or (2) the decision to migrate seasonally, and  $X$  is a vector of household and community variables, poverty perception and network variables and in the case of seasonal migration also individual migrant characteristics.

In line with the well-established literature of the New Economics of Labour Migration (NELM), we assume that migration is mainly a decision made at the household level. The departure of a

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<sup>7</sup> It should also be noted here that a seasonal migrant is able to maximize the migration benefit by earning money at the higher wage level abroad while spending it at low prices at home.

migrant is seen as familial strategy to ease liquidity constraints and diversify risks in the absence of well-functioning labour, insurance and credit markets (see Stark, 1991 or Taylor and Martin, 2001).

## 4. DATA

The analysis done in this paper is based on a dataset with an explicit focus on migration and remittances in the Republic of Moldova. The survey was conducted by CBS AXA, in cooperation with the EU Food Security Programme and the IMF in Moldova. It was done during the months October and November 2004, and included migration cases after January 2003. The sample consists of 3668 randomly selected households, of which 1001 households reported to have a migrant. All households participated in a screening study in order to find out about general household characteristics, such as household size, education, or expenditures. Additionally, the 1001 households with migrants were interviewed more in depth in order to obtain details about the migrant, the situation before and after migration, and remittances received.<sup>8</sup> Here, we employ the screening study for answering questions about the migration decision and well-being of migrant households. Moreover, we use the smaller sample of migrant households to further investigate the determinants of seasonal migration.

### 4.1 Description of Variables

In order to analyse the determinants of migration (question 1), we employ a binomial variable indicating whether a household has a migrant or not. If the household is a *migrant household*, it takes on the value 1 and is zero otherwise. Further, we analyse the determinants of migrating seasonally (question 2). The second dependent variable - *seasonal migrant* - takes on the value 1 if the migrant was abroad for a few months only, and is zero otherwise (see table 2).

Table 1 shows the summary statistics of our variables for the entire sample, non-migrant households, and migrant households, sorted by the variable categories household characteristics, poverty perception variables, network variables and community variables.

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<sup>8</sup> Further details about the survey and a summary report are provided in CBS AXA (2005).

**Table 1 - Summary statistics**

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>
	Overall		Non-migrant households		Migrant households	
<i>Dependent Variables</i>						
Migrant household	0.27	0.45				
Seasonal migrant					0.40	0.49
<i>Household Characteristics</i>						
Household size	3.34	1.45	3.07	1.41	4.08	1.30
Number of adults	2.78	1.22	2.56	1.15	3.36	1.23
Number of male adults	1.32	0.86	1.19	0.81	1.67	0.89
Number of female adults	1.45	0.77	1.36	0.73	1.68	0.83
Dependents	0.57	0.83	0.51	0.8	0.72	0.90
Young dependents	0.14	0.40	0.11	0.36	0.2	0.47
Adults with secondary educ.	1.00	1.18	0.91	1.11	1.26	1.32
Adults with vocational educ.	0.60	0.87	0.52	0.80	0.81	1.00
Adults with university educ.	0.56	0.89	0.54	0.85	0.62	0.99
Age of household head	52.96	14.98	54.00	15.36	50.19	13.54
"European" citizenship	0.03	0.18	0.02	0.15	0.06	0.25
<i>Poverty Perception Variables</i>						
Perceived poverty situation: bad	0.46	0.50	0.46	0.50	0.47	0.50
Perceived poverty situation: med.	0.39	0.49	0.35	0.48	0.51	0.50
Perceived poverty situation: good	0.14	0.35	0.19	0.39	0.02	0.16
<i>Network Variables</i>						
Family migration experience	0.18	0.39	0.08	0.27	0.47	0.50
Community network (1999)	6.32	6.36	5.62	5.75	8.18	7.45
Community network (2003)	21.82	13.74	18.98	11.83	29.4	15.5
Community network (2004)	27.37	15.98	23.86	13.83	36.72	17.51
<i>Community Variables</i>						
Rural area	0.54	0.50	0.50	0.50	0.65	0.48
Chisinau	0.20	0.40	0.24	0.43	0.09	0.28
<i>Migrant Individual Characteristics</i>						
Male					0.66	0.47
Age					34.75	9.77
Married					0.62	0.49
No education					0.11	0.31
Secondary education					0.41	0.49
Vocational education					0.28	0.45
University education					0.20	0.40
	N = 3668		N = 2667		N = 1001 (Seas.: N=1000)	

The variables on household characteristics include size, gender and demographic composition, as well as educational attainment. Moreover, we introduce a dummy for Romanian or Bulgarian citizenship. The number of all household members is given by the variable *household size*, which is expected to increase the probability of migration. Large households may, in fact, be more prone to diversify their allocation of labour internationally as it will be less costly for them to send one productive member abroad. We also define a variable for the number of *dependents* (all household members of age 15 or younger), and *young dependents* (household members younger than 6). We expect households with many children to be less likely to leave and settle abroad, as the disutility of emigration (i.e. the cost of separation) increases with each additional dependent.

Besides these age related variables, household characteristics contain human capital variables: the number of household members with *no completed education*, completed *secondary education*, completed *vocational education*, and completed *university education*. These, or similar variables have been used by many scholars in this field, amongst others Mora and Taylor (2005), Taylor et al. (2003), or Adams (2005). In fact, a common finding in the migration literature is that years of schooling and other human capital variables have a significant positive impact on the decision to migrate (Taylor and Martin, 2001). Moreover, a variable for *age of household head* is included. This variable is expected to be positively related to the prevalence of migration, as older household heads are more likely to have children in the prime migration age (cf. Adams, 2005). Finally, we have information on whether a household member (usually the migrant) has a Romanian or Bulgarian passport, which eases entering the European Union. Kule et al. (2000) show for Albania that ease of access to migration destinations, for example the availability of a visa, motivates emigration. Accordingly, holding a “*European*” *citizenship* is expected to increase the probability of migration, at least to European destinations.

The next set of variables contains *poverty perception* indicators. Instead of using a poverty indicator based on money values, we measure poverty according to the subjective views of households. This approach can be associated to the traditional “Leiden-School” of poverty measurement (Hagenaars, 1986) and is used similarly by, amongst others, Van Dalen et al. (2003). Our survey allows assessing present day poverty perception because households were directly asked about it. However, for migrant households, the perceived poverty *today* might not be representing perceived poverty at the time when the migration decision was made. In fact, it is very likely that the household’s situation improved due to remittances received from the migrant. In order to obtain information about the household’s socio-economic situation *before* migration, we construct a poverty perception variable based on the household’s assessment of food and clothes availability, and living conditions before migration.<sup>9</sup> This is subsequently pooled with present day perceptions of *non-migrant* households.

Furthermore, we construct several network variables. Networks can be an extremely important determinant of migration, since they imply that information on e.g. destination or travel modes is made available to a potential migrant. This enables them to better assess the costs and benefits of working abroad, so that hazards of migration are mitigated (cf. Espinosa and Massey, 1997). Moreover, the migrant might receive direct assistance before departure or in the destination country. The most commonly used measure to quantify networks is the migration prevalence ratio, which is simply the percentage of households in a certain community who ever had a migrant (McKenzie, 2005). We apply a slightly different approach by calculating the percentage of migrant families in each of Moldova’s 137 localities for the year 2004 (*community network*). In

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<sup>9</sup> We consider these three items as bare necessities.

addition to the community network, we employ a dummy for an existing *family migration experience*, which captures whether the family ever had a migrant abroad.

Finally, we construct community variables to control for locality effects, i.e. dummies indicating whether a household is *rural* or urban, and whether it is situated in the capital *Chisinau*. For the subsample of migrant households, we also employ individual migrant characteristics, including gender (a dummy denoted as *male*), marital status (a dummy denoted as *married*) and the individual *educational level* (dummies for every educational level).<sup>10</sup>

#### 4.2. Some Stylised Facts on Migrant Households in Moldova

Many features and facts about migration and remittances in Moldova have already been discussed in section 2. We will therefore limit our presentation to a few stylised facts in the dataset at hand. Note first that 27% of all households in our sample have a migrant (see table 1). Another interesting observation is that 40% of these migrants are seasonal migrants, defined as having left “seasonally for a few months” (see table 2). In contrast, 60% are long-term migrants indicating that they left Moldova permanently.

Comparing migrant and non-migrant households in our dataset conveys some interesting insights as well (see table 2). First, migrant households have on average one member more than non-migrant households, slightly higher education, younger household heads, and more often a household member holds a “European” citizenship. Second, it appears that networks are a major distinguishing feature of migrant and non-migrant households. Almost half of the migrant households have a family network, whereas this is reported by only 9% of the non-migrant households. Moreover, community networks are also larger for migrant households, i.e. they seem to live in communities where migration is more common. Third, 65% of the migrant households live in rural areas, compared to 54% of all households. In the capital city Chisinau the proportion of migrant households is particularly low with a prevalence ratio of just 9% compared to the average of 27%.

### 5. EMPIRICAL RESULTS

This section presents our estimation results, aimed at identifying the determinants of migration in Moldova. We first address the general decision of whether to send a migrant or not, which is analysed for the entire sample at disposal. Then, we turn to the question of what determines

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<sup>10</sup> These variables will only be used for analysing the determinants of seasonal migration.

seasonal determination, as compared to permanent and semi-permanent migration. This analysis is constrained to the subsample of 1000 migrant households.

### 5.1. Determinants of Sending a Migrant

The regression results for answering the question about the characteristics of households who send a migrant are presented in table 3. The coefficient of household size turns out to be significantly positive. Hence, an additional household member increases the probability of having a migrant in the household by approximately 8%. However, an additional dependent decreases the probability of having a migrant by more than 6%.<sup>11</sup>

*Age of the household head* lowers the probability of being a migrant household significantly. This stands in contrast to Adams (2005) who finds the opposite. However, although the effect is statistically significant, it does not have any quantitative effect, as the marginal effect of -0.27% in table 4 shows.

As expected, holding a “*European*” citizenship (i.e. Romanian or Bulgarian) increases the probability of being a migrant household by more than 19%. The citizenship eases access to the European Union countries and therefore has a positive impact on migration probability.

Next, it is interesting to discuss the coefficients of the *education* variables. As all four models show, only the number of adults with university education is significant at the 5% level. The number of adults with vocational education has a weaker effect; the effect of members with secondary education is even insignificant. Although an additional adult with higher education increases the migration probability, we have to qualify this statement since the quantitative importance of this variable is not very high (a maximum of 2.7% increase in probability). Hence, education does not appear to play a main role in determining Moldovan migration flows.<sup>12</sup>

The households’ *perception of poverty*, which functions as an indicator for the household’s wealth, turns out to be an extremely significant determinant of sending a migrant, both statistically and quantitatively. As the four models indicate, the perception of being poor strongly increases the probability of sending a migrant (up to 52%) if compared to households who perceive themselves as *not* poor (which is the base level). To put it differently, those households who do not have enough revenue for the bare necessities, or those who just have enough, are much more likely to

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<sup>11</sup> Replacing *dependents* by *young dependents*, i.e. those younger than 6, reveals that young dependents alone do not have a significant effect on the migration decision.

<sup>12</sup> The fact that university education does play a small role may seem surprising, since most migrants work as ‘low skilled’ employees abroad (e.g. as seasonal workers on construction sites in Russia). Yet, as we will see in the next subsection, the coefficients have the opposite sign if one considers only the decision to migrate seasonally.

send a migrant. These results indicate that migration in Moldova has become a coping strategy for poor households, which is in line with Moldova's poverty reduction report (IMF, 2004) and the IMF report by Cuc et al. (2005). Moreover, additional statistics in CBS AXA (2005) reveal that a large part of migrant households use the foreign wage income and remittances for the most basic consumption necessities such as food or clothes.

Turning to network effects, we find that the existence of a *family network* – i.e. whether the household ever had a migrant – strongly increases the probability of having a migrant today in all four models: the probability is increased by up to 46% if compared to households that never had a migrant. Besides that, *community networks* also have positive and significant effect on migration probability (see models 1 and 2). Although the marginal effect calculated in table 4 appears small (0.74%), this is in fact a rather significant increase: Since we measure the size of the community network in percent of migrant households in a community, the effect implies that a 1% increase in network size, increases a household's migration probability by three quarters of a percent. Thus, in line with the above-cited literature on other developing countries, we find clear evidence for strong network effects also in Moldova.

If one links this last result to the above-mentioned conclusion that migration is particularly likely among poor households one should refer to the interesting research conducted by McKenzie and Rapoport (2004). The authors argue that, in absence of networks, mostly wealthier households send a migrant, since they have more means to overcome informational constraints and risk a smaller proportion of their livelihood. Only in a second stage, when these early movers start to establish sizeable networks, migrants from poorer households follow and are able emigrate as well. Moldova thus appears to have reached the second stage, with considerable networks abroad and a flourishing 'migrational infrastructure', which permits even the most poor to search work abroad - at least in destinations such as Russia, which can be accessed relatively cheaply.<sup>13</sup>

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<sup>13</sup> While the costs of migrating to Russia or other countries in the region amount to a mere 100 US Dollars, costs for a visa and/or illegal transfer to an EU country such as Spain can well surpass 2000 US Dollars.

**Table 2 - Regression results for the migration decision**

	Model 2	Model 3	Model 4
Household size	0.558 (9.44) ***	0.561 (10.00) ***	0.538 (9.69) ***
Male adults in household			
Female adults in household			
Dependents	-0.412 (-5.10) ***	-0.415 (-5.45) ***	-0.400 (-5.23) ***
Adults with secondary education	0.083 (1.45)	0.046 (0.84)	0.064 (1.16)
Adults with vocational education	0.124 (1.89) *	0.136 (2.18) *	0.149 (2.39) **
Adults with university education	0.161 (2.37) **	0.117 (1.81) **	0.176 (2.70) ***
Age of household head	-0.018 (-4.76) ***	-0.019 (-5.33) ***	-0.020 (-5.34) ***
European' citizenship	1.023 (4.18) ***	1.216 (5.29) ***	1.219 (5.27) ***
Perceived poverty situation: bad	3.088 (12.11) ***	2.777 (11.49) ***	2.791 (11.46) ***
Perceived poverty situation: medium	3.078 (12.21) ***	2.840 (11.87) ***	2.875 (11.91) ***
Family migration experience	2.188 (18.73) ***	2.246 (20.20) ***	2.201 (19.70) ***
Community network (2004)	0.050 (15.54) ***		
Rural	-0.310 (-2.86) ***	0.245 (2.50) **	
Chisinau			-0.945 (-6.66) ***
Constant	-6.735 (-18.84) ***	-5.212 (-16.40) ***	-4.914 (-15.30) ***
Number of observations	3666	3666	3666
Log likelihood ratio	-1395.533	-1529.147	-1507.605
Pseudo R2	0.350	0.288	0.298

Notes: \* indicates significance at the 10% level; \*\* indicate significance at the 5% level; \*\*\* indicate significance at the 1% level. In contrast to the descriptive statistics in table 1, regressions include only 3666 cases, as two households have missing values.



**Table 3 - Marginal effects on migration probability in % (at mean)**

	Model 2	Model 3	Model 4
Household size	8.19 ***	8.82 ***	8.29 ***
Dependents	-6.04 ***	-6.53 ***	-6.16 ***
Adults with secondary educ.	1.22	0.72	0.98
Adults with vocational educ.	1.82 *	2.14 *	2.30
Adults with university educ.	2.35 **	1.84 **	2.71 **
Age of household head	-0.27 ***	-0.30 ***	-0.30 ***
European' citizenship	19.51 ***	25.13 ***	24.88 ***
Perceived poverty sit.: bad	48.35 ***	45.62 ***	45.21 ***
Perceived poverty sit.: medium	52.39 ***	50.32 ***	50.31 ***
Family migration experience	43.74 ***	46.43 ***	45.05 ***
Community network	0.74 ***		
Rural	-4.59 ***	3.82 ***	
Chisinau			-12.18 ***

Notes: \* indicates significance at the 10% level; \*\* indicate significance at the 5% level; \*\*\* indicate significance at the 1% level. t-statistics are the same as in table 3.

Interestingly, our findings for the importance of community variables (i.e. rural, Chisinau) are strongly connected to the effects of networks on the migration decision. In models 1 and 2, the coefficient for rural is significantly negative, implying that households from rural areas are less likely to have a migrant. This result is somewhat counterintuitive against the background that rural households are on average poorer than urban households, and taking into account our earlier finding that poorer households are more likely to have a migrant. The solution to this paradox lies in the existence of strong community network effects in rural areas. Removing the variable for community networks (model 3) leads to the opposite sign of the rural coefficient: it now positively affects the probability of having a migrant. An intuitive explanation could be that networks in rural areas are stronger, easier to maintain, and possibly much more effective, which seems logical comparing networks in a big, anonymous city, and a small village where everybody knows his neighbour. More evidence would be needed to be able to assess the effectiveness of community networks in rural and urban settings and to establish a robust and unambiguous relationship.

Finally, note that a dummy indicating whether a household lives in the capital Chisinau can replace the dummy for a rural household. The result shows that the fact that a household is based in Chisinau lowers the probability of sending a migrant by more than 12%, if compared to households based outside Chisinau. This finding is in accordance with the above-mentioned reports on migration in Moldova.

## 5.2. Determinants of Seasonal Migration

As mentioned above, seasonal migration is a distinguishing feature of the Moldovan economy. About 40% of the migrant households have a seasonal migrant. Therefore, it is of particular interest to find out more about the determinants of seasonal migration. Again, we employ logit models on a binary variable indicating whether a household has a seasonal migrant. Note that the issue under consideration now is not the decision to migrate but the decision whether to migrate seasonally or permanently, so that the regression is now run for the 1001 migrant households only.<sup>14</sup> In contrast to the former analysis, we can therefore make use of some individual migrant characteristics as well. Regression results for models 1 to 3 are presented in table 5. The estimated marginal effects on the probability of seasonal migration (at mean values) are shown in table 6.

All three models show that *household size* has a positive effect on the probability of seasonal migration and is (weakly) significant. Moreover, *age of household head* has a significant negative effect on the seasonal migration decision. However, as before, the variable is quantitatively hardly important (at most -0.44% per additional year), as can be seen from the calculated marginal effects.

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<sup>14</sup> Note that we included 1001 observations in the descriptive statistics in table 2. One household, however, did not answer the question on seasonal migration, so that the regression includes 1000 cases only.

**Table 4 - Regression results for the seasonal migration decision**

	Model 1	Model 2	Model 3
Migrant male			0.899 (5.74) ***
Migrant age			-0.011 (-1.41)
Migrant married			0.119 (0.79)
Migrant education			-0.126 (-1.25)
Household size	0.142 (1.68) *	0.141 (2.10) **	0.130 (1.88) *
Dependents	0.001 (0.01)		
Young dependents		0.029 (0.18)	-0.020 (-0.12)
Adults with secondary education	-0.059 (-0.78)	-0.050 (-0.74)	-0.062 (-0.90)
Adults with vocational education	-0.167 (-1.94) *	-0.153 (-1.91) *	-0.136 (-1.52)
Adults with university education	-0.345 (-3.63) ***	-0.323 (-3.69) ***	-0.245 (-2.31) **
Age of household head	-0.017 (-2.93) ***	-0.018 (-3.30) ***	-0.013 (-2.16) **
“European” citizenship	0.126 (0.45)	0.105 (0.38)	
Perceived poverty situation: bad	-0.328 (-0.75)		
Perceived poverty situation: medium	-0.041 (-0.10)		
Family migration experience	0.825 (5.97) ***	0.830 (6.01) ***	0.822 (5.73) ***
Rural household	0.260 (1.72) *	0.268 (1.78) *	
Chisinau			-0.657 (-2.25) **
Constant	-0.105 (-0.20)	-0.275 (-0.82)	-0.308 (-0.63)
Number of observations	1000	1000	1000
Log likelihood ratio	-624.523	-626.700	-603.353
Pseudo R2	0.074	0.071	0.104

Notes: \* indicates significance at the 10% level; \*\* indicate significance at the 5% level; \*\*\* indicate significance at the 1% level.

**Table 5 - Marginal effects on probability of seasonal migration in % (at mean)**

	Model 1	Model 2	Model 3
Migrant male			20.21 ***
Migrant age			-0.26
Migrant married			2.80
Migrant education			-2.99
Household size	3.39 *	3.36 **	3.08 *
Dependents	0.02		
Young dependents		0.69	-0.47
Adults with secondary education	-1.41 *	-1.18 *	-1.47
Adults with vocational education	-3.99 ***	-3.65 ***	-3.21 **
Adults with university education	-8.21	-7.70	-5.79
Age of household head	-0.42	-0.44	-0.30
“European” citizenship	3.04	2.53	
Perceived poverty situation: bad	-7.78		
Perceived poverty situation: medium	-0.99		
Family migration experience	19.55 ***	19.65 ***	19.33 ***
Rural household	6.14 *	6.32 *	
Chisinau			-14.26 **

Notes: \* indicates significance at the 10% level; \*\* indicate significance at the 5% level; \*\*\* indicate significance at the 1% level.

We do *not* find any significant effect of dependents or young dependents on the decision to migrate seasonally in any of the models. We think that this result is extremely surprising as we expected exactly the opposite – especially in case of young dependents, i.e. children younger than 6. After all, it seems to make sense intuitively that parents are hesitant to leave their children for a long time, but apparently the presence of (young) dependents does not stop a migrant from migrating permanently. The finding is worrisome, as it implies that, due to permanent migration, many children grow up without or with only one parent.<sup>15</sup> As mentioned in the most recent Poverty Reduction Report for Moldova, child poverty among children growing up without

<sup>15</sup> If the migrant is not one of parents, this result is not at all worrisome of course, but it is quite likely that the migrant *is* one of the parents in most cases.

parents is indeed becoming a serious problem - especially in regions with high rates of out-migration (IMF, 2004).

Some findings related to this concern the effects of individual migrant characteristics. The only significant result here is that the probability of having a seasonal migrant is higher if the migrant is male. The migrant's age and education, and the fact whether he is married or not does not influence the decision. We expected that at least marriage increases the likelihood of migrating only seasonally, because of the psychological costs of separation. Again, this result could be worrisome because families are often living separated.

Another finding, which we consider as surprising, are the insignificant coefficients for the poverty perception variables in model 1. We expected to find a positive effect here because seasonal migration appeared to us as a natural coping strategy for the poor. The insignificant results suggests that – although migration appears to be phenomenon of poorer households – the perceived poverty situation does not affect the decision of which form of migration is chosen.

An interesting story evolves from the results for the human capital variables. An additional household member with university education significantly lowers the probability of having a seasonal migrant by up to 8%. This suggests, that mainly low-skilled workers migrate seasonally. Conversely, higher skilled workers are more likely to leave abroad permanently. The finding is in accordance with the qualitative research carried out in the Moldovan migration studies, indicating that most permanent migrants leave for European destinations, which are harder to reach due to much higher costs and risks.

Contrary to our earlier findings, community networks do not appear to have any effect on the decision to migrate seasonally (result is not reported). The presence of community networks appears to influence the general decision to migrate or not, while it does apparently not influence the choice between seasonal and longer-term migration. The family network variable turns out to be significant and positively related, which is intuitive given the definition of our variable.

Last but not least, some interesting insights evolve from the effects of community variables on the decision to migrate seasonally. The coefficient for the rural dummy is weakly significant and positive. The estimated marginal effects tell that rural households have a 6% higher probability to have a seasonal migrant than urban households. On the other hand, migrant household located in Chisinau are less likely to have a seasonal migrant: the probability is 14% lower than for households located out of Chisinau.

Taken together, our models explain seasonal migration less well than we expected initially. Yet,

we could gain some important insights about factors that do *not* seem to determine the decision to migrate seasonally. In order to deepen the knowledge about determinants of seasonal migration, it would probably be useful to include variables indicating the migrant's occupation, or the industry in which the migrant is employed. Besides that, information about the migrant's labour market status would probably add a lot to the analysis. We expect these variables to be among the main determinants of seasonal migration.

### 5.3 Robustness Checks

Generally, the results presented above are surprisingly robust to variable selection and model extensions. For example, we disentangled household size in number of adults as well as the number of female and male adults. Similarly, we checked the results by including age squared of the household head. It turned out, that the coefficients were not significantly affected in either case.

As a more comprehensive exercise, we extended the number of community variables in order to control for regional income differences and local labour market conditions. For this purpose we extracted and pooled regional level data from the Moldovan Household Budget survey of 2004.<sup>16</sup> First, we re-run our regressions including a variable of per capita *average income* and per capita *average expenditure* as well as *average salary*.<sup>17</sup> Additionally, we included the variable *agric* defined as the number of household heads in the region working in agriculture, and the variable *fixed capital investments* in the region provided by the National Statistics Office Moldova. None of these changes influenced our results in a severe way. Only the community network variable as well as the rural dummy were affected. Inclusion of the percentage *agric* shows that it takes over the role of the *rural* dummy from previous regressions. In particular, we find a negative coefficient of *agric* when *community network* is included, and a switch to a positive coefficient when *community network* is excluded. Again, this might indicate that networks are more effective in rural settings because they seem to play such an important role that *community network* picks up the entire positive effect of *rural*.

## 6. CONCLUSION

This paper sheds some light on the phenomenon of mass emigration in Moldova; in particular on the factors that induce a household to send a migrant abroad, and on the factors that influence the choice for seasonal versus permanent migration. A unique dataset on migration and remittances allows us to explore these issues on a micro data level.

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<sup>16</sup> For this purpose we calculated regional averages from individual household-level data.

<sup>17</sup> Note that the number of observations drops dramatically when we do these robustness checks because the community variables included stem from a different dataset and are not available for all household observations.

Focussing on the general determinants of migration first, we find that the probability of sending a migrant increases in household size, education, and the presence of a household member with Romanian or Bulgarian citizenship. An additional household member younger than 16 *decreases* the probability of sending out a migrant. This indicates that the disutility of migration and the reservation wage are particularly large in the presence of children. Moreover, we establish that households who consider themselves as poor have a higher propensity to send a migrant than richer households. Hence, migration appears to be an important coping strategy of Moldova's poor. This finding underlines the potential benefits of migration as an important livelihood option for those living under dismal economic circumstances. In a country such as Moldova, migration might in fact represent the only viable action to escape poverty and misery that people are able to initiate themselves.

In line with a series of studies for non-CIS countries, we find that the existence of networks – both on the family and community level – is a very important determinant of migration in Moldova. The probability of sending a migrant increases significantly if the household has some migration experience, or if there are many other migrant households in the community. Interestingly, our results also suggest that community networks are especially effective in rural areas. However, more evidence on this relationship is needed in order to make a more general statement about its relevance and correctness.

Turning to the determinants of seasonal migration, we can report some interesting, and sometimes surprising new insights. *First*, we find that the probability of seasonal migration increases significantly if the migrant is male, while marital status has no effect on the decision of migration duration. Similarly, community networks and the household's perceived poverty do not seem to affect the choice for seasonal versus permanent migration. Even the presence of dependents (younger than 16) and young dependents (younger than 6) does not appear to influence the decision whether to migrate for longer or shorter periods of time. We regard this last finding as particularly worrisome since, in the presence of children, one would expect migrants to return to their families more often and therefore engage in shorter-term migration. The result gives an alarming sign that child neglect and child poverty in Moldova is likely to further increase in the future.

Although we were able to provide some first empirical insights, Moldova's traumatic mass emigration merits further research - not only for policymakers in the country itself but also as an exiting and relevant case study. The dataset at hand as well as other unexploited micro-datasets in Moldova<sup>18</sup> might be of good use for further analysis. In particular, it would be interesting to

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<sup>18</sup> Such as the Moldovan Household Budget Survey and the Moldovan Labour Force Survey

quantify the effects of migration on the situation of households left behind in Moldova. A focus on local labour market conditions could reveal the effects of mass emigration on wages and labour participation rates. Similarly, one could investigate the impact of migration on poverty incident rates and inequality e.g. by employing the estimation procedures by Adams (1989, 2005) or Barham and Boucher (1998) (see De Haan, 1999, or Rapoport and Docquier, 2005, for a good related literature survey). In such a context it would also be possible to test whether there is a selection bias among Moldovan migrants – i.e. whether migrant households differ systematically from non-migrant households (cf. Adams, 2005; Mora and Taylor, 2005; Chiquiar and Hanson, 2002). Lastly, it could be rewarding to disentangle the factors influencing the destination choice of Moldova's out-migrants. Such an exercise could provide insights on which type of migrant households choose to go to the CIS, and which ones are more prone to migrate to Western European or other countries.



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