

# Migration intentions in CESEE: sociodemographic profiles of prospective emigrants and their motives for moving<sup>1</sup>

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*What are the characteristics of prospective emigrants from Central, Eastern and Southeastern Europe (CESEE)? How many people intend to move? We use data from the 2017 wave of the OeNB Euro Survey to study migration intentions among individuals in CESEE. Our descriptive findings suggest that 8.3% of individuals aged 25 to 64 have the intention to move abroad within the next year. Migration intentions are considerably more common among young people and men. In most of the countries, we do not find significant differences related to educational attainment. The prevalence of migration intentions varies considerably across countries: In non-EU CESEE countries migration intentions are more widespread on average than in CESEE EU countries. Probit estimations confirm our descriptive findings. They further highlight that individual unemployment is a robust predictor of migration intentions in CESEE, while household income is not significantly related to migration intentions. The level of regional development plays a key role in shaping migration intentions, and so do (direct and indirect) networks and trust in institutions. Finally, we find that the level of regional economic development also influences the magnitude of the push effect of individual unemployment. For individuals living in depressed regions, the positive correlation between unemployment and migration intentions is higher.*

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Central, Eastern and Southeastern Europe (CESEE)<sup>3</sup> has seen considerable out-migration in the past few decades. With the exception of the Czech Republic and Hungary, all ten countries covered in this study experienced negative net migration through the 1990s up until now. Recently, net migration rates have moderated in CESEE EU countries, but in the non-EU countries, negative net migration is still sizeable.<sup>4</sup> Together with unfavorable demographic developments, this adds up to strong declines in the working age population in these countries that are projected to further increase in the future (IMF, 2016; IMF, 2017; Atoyan et al., 2016). Recent opinion polls also reveal that brain drain and emigration are increasingly perceived as a major challenge in the Southeastern European countries (Regional Cooperation Council, 2018). A recent report (World Bank and wiiw, 2018) highlights that in spite of this issue's importance for the region, data are sparse, and there are large knowledge gaps, especially regarding the motives and characteristics of migrants.

This study is an effort to contribute to a better understanding of the characteristics of individuals that want to emigrate from CESEE. We use individual-level

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<sup>3</sup> Six EU countries (Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania) and four non-EU countries (Albania, Bosnia and Herzegovina, the former Yugoslav Republic (FYR) Macedonia and Serbia) are covered in this study.

<sup>4</sup> Data on net migration are taken from the UN World Population Prospects (United Nations, 2017).

data from the OeNB Euro Survey to study the characteristics of these individuals. The most recent survey wave was carried out in fall 2017, and with the collected data we are able to assess the prevalence of migration intentions but also the sociodemographic profiles of prospective emigrants. In a first descriptive analysis, we follow Raggl (2017), who uses OeNB Euro Survey data from the year 2014 to identify gender, age and education profiles of prospective migrants. With descriptive tools, we find, for the year 2017, that 8.3% of the working age population (aged 25 to 64) in an average CESEE country intend to emigrate. Among the young working age population (aged 25 to 39), the share is higher: 13.3% state that they intend to leave their country within the next year.

The core part of the analysis is an econometric assessment of individual and regional characteristics that are related to migration intentions. We consider a large set of possible influential factors commonly referred to in the literature and categorize them into five groups: sociodemographic characteristics, (individual) economic factors, regional development, network effects, and trust in institutions. Using (polychoric) principal component analysis, (P)PCA, we reduce the dimensionality of the dataset before running probit regressions to identify the effects.

This paper is structured as follows: Section 1 discusses the relevant literature and section 2 focuses on the usage of intentions data. Sections 3 and 4 explain the data used and sketch the setting of the empirical analysis, before the results are discussed in section 5. Section 6 concludes.

## 1 Literature

Traditionally, the human capital model is used to model migration decisions. The expected costs and the benefits of migration are compared, and given a positive outcome, a person decides to migrate. Early analytical assessments were carried out by Sjaastad (1962) and Becker (1964).<sup>5</sup> In his seminal work, Borjas (1987) developed a model that links the selection of migrants to the skill premium and wage dispersion in the migrants' countries of origin. He argued that selection is positive, i.e. migrants are relatively better educated than those who stay, if income inequality in the origin country is low, and selection is negative if inequality is high.

Chiswick (1999) reasons that a positive selection of migrants is more likely: For more able individuals it is easier to bear the out-of-pocket costs of migration; they presumably migrate more "efficiently," i.e. they have lower forgone earnings. The positive selectivity even intensifies if the relative wage gains in the destination country is higher for highly skilled individuals.<sup>6</sup> Chiquiar and Hanson (2005) provide further evidence on a positive selectivity of migration, as do Liebig and Sousa-Poza (2004) in their study of migration intentions. Arguing that intentions are less prone to selection based on host country specifics, they use data on intentions from survey data spanning 23 countries, among them many typical immigration countries, for 1995. They find that one can generally expect a positive selection of migrants, even if income inequality is high in the country of origin, thereby contrasting with Borjas (1987). In addition, they confirm that income inequality

<sup>5</sup> Another influential work is the study by Harris and Todaro (1970), who used a two sector-model to explain migration behavior by regional disparities.

<sup>6</sup> In this theoretical framework, negative selection can only be possible, if the relative wage gains are considerably higher for low-skilled individuals than for highly skilled individuals. These wage gains of the low-skilled must offset the (positive) selectivity coming from out-of-pocket costs and from the higher efficiency of migration for the highly skilled.

in the country of origin reduces positive selection. The data they use, however, date back to 1995.

Besides this important link between migration (intentions) and human capital, several other factors can be related to migration. One strand of the literature highlights that migration may occur even if economic improvement upon migration is negligible (see e.g. Stark, 2003). Otrachshenko and Popova (2014) use Eurobarometer data from 27 Eastern and Western European countries collected in 2008 to relate life satisfaction measures – summarizing non-observable factors that go beyond economic factors such as tastes, cultures, or the feeling of deserving a better life – to individual migration intentions. Their findings suggest that in Central and Eastern European countries, among them five of the CESEE EU countries covered in the OeNB Euro Survey, individuals that are dissatisfied with life have more pronounced migration intentions. Similarly, Van Dahlen and Henkens (2013) show for the Netherlands that discontent with the quality of the public domain (mentality, crowded spaces, nature, pollution, crime, etc.) constitutes the most important group of factors explaining migration intentions. In a recent study, Williams et al. (2018) use data on nine European countries – among them Romania as the only country also covered in our analysis – and find that although socioeconomic factors have a strong explanatory power, also nonpecuniary factors play a nonnegligible role. Going beyond absolute income measures, Hyll and Schneider (2014) use data from Germany to show that the individual aversion to relative deprivation plays an important role in shaping migration preferences.

Migration has to be related to the receipt of remittances as well. Piracha and Saraogi (2017) use a large household survey from Moldova and find a causal link between receiving remittances and having the intention to emigrate. Apart from reducing credit constraints, remittances also signal previous emigrants' success in the host countries and thus increase the desire to emigrate.

Manchin and Orazbayev (2016) concentrate on network effects using individual-level data for more than 150 countries. Distinguishing between close and broad social networks both at home and abroad, they find that networks abroad are important determinants of migration intentions, and strong networks at home reduce migration intentions (see also Docquier et al., 2014). A similar analysis with the same dataset is presented in the recent Transition Report of the EBRD (2018). The results show that, between 2010 and 2015, intentions to emigrate became more widespread. The report further found that nonmonetary factors play an important role, especially the quality of life and the quality of amenities in the home country.

Migration intentions have also been related to risk aversion (see for example Dustmann et al., 2017; Huber and Nowotny, 2018), to political values (Sandu and de Jong, 1996, for Romania), to concerns about the future welfare of one's children (Dustmann, 2003), among others.

We use previous findings in the literature to define a set of possible covariates and relate them to individual migration intentions in ten CESEE countries in 2017. As common in the empirical literature on this topic, we use probit estimators to explain migration intentions to account for the fact that we have a binary dependent variable.

## 2 Data on intentions vs. actual behavior

Most studies that assess the characteristics of migrants rely on data from the host countries, using data on revealed preferences on migration – or actual migration outcomes. As the migration outcomes are likely to depend on specific characteristics inherent to the host countries (immigration policies, network effects, geographic proximity, historical links), this approach can lead to problematic results. If, for instance, a host country has migration policies that favor highly skilled migrants, immigrants to this country constitute a positively selected group. Using data on migration intentions – or stated preferences – can help overcome these limitations, because they are much less likely to suffer from this selection bias (Liebig and Sousa-Poza, 2004). A drawback of using data on intentions is that they are likely to overestimate true migration flows (see box 1 below). Zaiceva and Zimmermann (2008) argue that while the magnitude of (future) emigration may indeed be overestimated when building on migration intentions, studying the determinants of migration with data on intentions leads to results that are less prone to bias. Finally, it is worth highlighting that studying migration intentions is interesting and important in its own right. Being aware of the scope of migration intentions in populations and understanding their determinants is important for effective policymaking (Fouarge and Ester, 2007 and 2008).

Box 1

### In how far are migration intentions reflected in actual behavior?

*Not everybody that reports migration intentions will actually emigrate. Migration decisions are complex decisions and reasons for deviating from intentions are manifold.<sup>7</sup> Empirical studies show, however, that migration intentions are strong predictors for subsequent behavior: Gordon and Molho (1995) use data from 1980 to show that 90% of people who expressed intentions of leaving Great Britain actually did so within five years. Working on the same country, Böheim and Taylor (2003) find that among individuals who have a preference for migration, actual relocation is three times more likely. Dustmann (2003) studies return migration from Germany. Approximately, 25% of those who intended to, actually did move, and 85% of those who moved had previously indicated their intentions. Van Dahlen and Henkens (2008) find, for the Netherlands, that 24% of individuals with migration intentions in 2004 and 2005 actually moved in the subsequent two years. In a more recent study, the same authors (2013) show that 34% of those with migration intentions in 2005 emigrated within five years. Furthermore, they find only few differences in observable characteristics between “movers” and “dreamers,” i.e. between those who emigrated and those who did not in spite of having migration intentions. Merely people’s health status appears to explain why individuals deviate from their intentions. In a similar vein, Creighton (2013) shows, for Mexico, that aspiring to move to the U.S.A. predicts subsequent migration to the U.S.A., and the same holds for intermunicipal and interstate migration.*

*While data on migration intentions cannot be used interchangeably with data on actual migration outcomes and do not predict actual behavior perfectly (Manski, 1990), empirical evidence shows that they have predictive value for actual behavior. This result, together with the advantage of lower selection effects when using source country data, explains the extensive literature that uses intentions data in this context.*

<sup>7</sup> See the theory of reasoned action developed by Fishbein and Ajzen (1975) for a relationship between intentions and actual behavior.

### 3 Empirical setting

Methodologically, we use probit estimations to assess the determinants of individual migration intentions. As discussed in the literature section, a large set of possible covariates can influence a person's intention to migrate – many of them being covered by the OeNB Euro Survey. We assign all possibly relevant explanatory variables to one of the following categories: sociodemographic characteristics, economic factors, regional development, network effects and trust in institutions (see table A1 in the annex). In many cases, the variables within one group are highly correlated, and including all variables in a regression analysis can lead to multicollinearity issues – high standard errors and imprecise estimation. Omitting some of the variables, however, may cause us to leave out potentially important information. We use principal component analysis (PCA) to reduce the dimensionality of the data while keeping the informational content at a high level.

#### 3.1 (Polychoric) principal component analysis

This method was developed independently by Pearson (1901) and Hotelling (1933) and it is often used in economics to reduce the dimensionality of a dataset. A PCA finds the linear combination of variables that accounts for the greatest variance in the data. The first principal component is the linear combination of the variables that exhibits the largest variation. It is calculated as a weighted sum of the original variables and it includes most information contained in the original variables. The weights are commonly referred to as *factor loadings*. The second component is orthogonal to the first component and accounts for as much of the remaining variation as possible, etc. The analysis reports as many components as there are variables, each of them being orthogonal to the others. If all principal components were included in a regression, nothing would be gained vis-à-vis the inclusion of all original variables, so a subset of the components is used. There is no definite rule on how to decide how many components should be used. The decision is usually taken based on the eigenvalues of the components, where an eigenvalue greater than 1 indicates an inclusion of that component (*Kaiser rule, scree test*)<sup>8</sup>.

As many of our variables are discrete (binary or measured on a Likert-type scale) and PCA requires normality, we use *polychoric* principal component analysis (PPCA) if the underlying variables are discrete. PPCA is an extension of PCA developed by Kolenikov and Angeles (2004) that accommodates these types of variables. PPCA works for binary and ordinal data while it is not suitable for categorical variables that have no natural ordering. If the underlying variables are categorical, we use PCA.

The choice of variables that enter a PCA should be based on the criterion that all variables describe a common phenomenon. For groups of variables that fulfill this – we perform (P)PCAs and use the most relevant components (eigenvalues greater than 1) in the probit regressions (see the annex for a detailed list of explanatory variables). Box 2 outlines the procedure for variables related to regional economic development.<sup>9</sup>

<sup>8</sup> All eigenvalues add up to the number of variables. An eigenvalue of e.g. 2 means that this component explains as much variation as two of the original variables. If a component has an eigenvalue smaller than 1, this implies that it explains less variation than an original variable (and one would be better off including an original variable).

<sup>9</sup> Detailed results of the (P)PCAs for the other variable groups cannot be included due to space limitations but they are made available in the online appendix.

### Example: PCA for regional economic factors

Several variables can be used to approximate regional development in a respondent's area of residence. Average household income, average unemployment rates and economic activity (measured by night light data) and the change in economic activity all represent aspects of regional development. All of these variables can be measured at different levels of regional aggregation and as they are likely to be highly correlated, multicollinearity issues can arise when including them all in a regression. Using only a selection of the variables, however, leads to an omission of potentially important information. PCA makes it possible to reduce the set of covariates while keeping a large part of the information.

The following table contains the first 5 components resulting from a PCA of 12 regional characteristics. The table contains the weights the variables receive in the construction of the principal components, the eigenvalues of the components and the cumulative variation in the data that is explained by the components.

Table

#### Principal component analysis for regional economic activity

	Component 1	Component 2	Component 3	Component 4	Component 5
Regional unemployment	-0.27	0.22	0.38	0.18	0.00
PSU unemployment	-0.19	0.17	0.37	0.73	0.01
Log(PSU equiv. income)	0.33	-0.16	-0.35	0.30	0.07
Log(regional equiv. income)	0.34	-0.18	-0.33	0.40	-0.05
Log(light 5km)	0.38	0.09	0.36	-0.21	0.23
Log(light 10km)	0.42	0.06	0.36	-0.14	0.11
Log(light 20km)	0.43	0.01	0.28	-0.02	0.00
Log(light NUTS 2)	0.33	-0.08	0.15	0.31	-0.24
Growth light 5km	0.01	0.41	-0.25	0.11	0.63
Growth light 10km	0.11	0.50	-0.17	0.03	0.17
Growth light 20km	0.14	0.49	-0.16	-0.03	-0.24
Growth light NUTS 2	0.09	0.44	-0.11	-0.07	-0.62
Eigenvalue	<b>4.28</b>	<b>3.10</b>	<b>1.53</b>	0.81	0.68
Cumulative variation explained	0.35	0.61	0.74	0.81	0.86
<b>Description of component</b>	<b>"Prosperous region"</b>	<b>"Developing region"</b>	<b>"Depressed region"</b>	not included	not included

Source: Author's calculations based on OeNB Euro Survey 2017.

Note: PSU=primary sampling unit. For further details on the variables, see annex.

All components with an eigenvalue greater than 1 enter the regression analysis. The first component reflects regions with relatively high income, low unemployment, a high level of economic activity (light) and moderate growth. It proxies "prosperous regions." The second component is characterized by considerable unemployment, low income, moderate activity, but high growth in activity. We refer to regions that fit these characteristics as "developing regions." The third component is similar to the second but differs in one aspect: it corresponds to regions with low/negative growth in activity and therefore reflects "depressed regions." Taken together, these three components account for 74% of the variation in the 12 variables.

### 3.2 Empirical specification

Based on the constructed variables and the results of the (P)PCA, we estimate the following empirical specification by simple probit regressions:

$$m_i = \alpha_r + \sum_{j=1}^J X_j^S \beta_j^S + \sum_{k=1}^K X_k^E \beta_k^E + \sum_{l=1}^L X_l^R \beta_l^R + \sum_{m=1}^M X_m^N \beta_m^N + \sum_{p=1}^P X_p^T \beta_p^T + \epsilon_i$$

where  $m_i$  is a binary variable that takes a value of 1 if an individual has the intention to emigrate to another country,  $X_j^S$  are  $J$  variables that belong to the group of socio-demographic characteristics,  $X_k^E$  represents the group of  $K$  economic factors,  $X_l^R$  the  $L$  regional characteristics,  $X_m^N$  the  $M$  variables capturing network effects and  $X_p^T$  are  $P$  variables capturing trust in institutions. In addition, a constant and a full set of country dummies, denoted in the equation by a country-specific constant  $\alpha_r$ , is included in all specifications. The country dummies control for all factors that are common to all individuals in a country, such as institutional characteristics, the political environment, historic ties to other countries, geographic location, and similar.  $\epsilon_i$  is a random error term. Standard errors are clustered at the regional level.

In the probit model, the estimated coefficients are not partial effects of the independent variables on the (likelihood of having) migration intentions, but the degree at which the z-score changes as a response to changes in the independent variables. We compute and report marginal effects in order to get a meaningful estimate of the magnitudes of the effects.

### 3.3 Caveats and limitations

Individuals' migration intentions can depend on and be influenced by a large number of factors, and controlling for all of them is not possible. We cannot rule out that some of our estimates suffer from endogeneity, which can bias the estimated coefficients. First, the coefficient of the education variable might be overestimated. Individuals might acquire more education because they intend to emigrate (brain gain effect, see for example Beine et al., 2001 and 2011). It might seem that highly skilled people often develop migration intentions while, in fact, individuals might be highly skilled *because* they have migration intentions. This reversed causality might lead to an overestimation of the true effect of education.<sup>10</sup> Second, the effect of networks might be overestimated. If the situation in migrants' home regions is not attractive and has not been attractive in the past, migrants of the past might have left for (unobservable) reasons that are similar to those prospective migrants are currently considering. Manchin and Orazbayev (2016) use satisfaction with life in the region as an instrumental variable for networks, while controlling for an individual's *own* life satisfaction in the main equation. The current wave of the OeNB Euro Survey, i.e. the 2017 fall wave, does not include a variable that would make it possible to approximate satisfaction with life in the region. Third, the effect of trust in institutions cannot be causally estimated in this setting. The causality could work in either way – from trust to migration intentions but also

<sup>10</sup> Our results do not suggest that highly skilled individuals more frequently harbor migration intentions than individuals with lower skill levels. If the coefficient is upward-biased, the true effect of education is even lower. Beine et al. (2011) find no significant incentive mechanisms for prospective migration in middle (and high) income countries, i.e. no evidence for the brain gain effect. This can add to an explanation of our findings for the CESEE region.

from migration intentions to trust. It is likely that the true effects are overestimated.<sup>11</sup> Next to these issues arising mainly from reversed causality, also the omission of relevant variables that are correlated with one or more of the independent variables can cause the estimates to be biased. Against this background, it is important to note that the econometric results presented in this study are conditional correlations and they do not constitute estimates of the causal effects.

#### 4 Data and descriptive statistics

The data used for this analysis is the OeNB Euro Survey, an individual-level dataset the Oesterreichische Nationalbank (OeNB) has been collecting in ten CESEE countries since 2007<sup>12</sup>. In each country and year, approximately 1,000 randomly selected individuals are interviewed. In the 2017 wave, the respondents were asked whether they have the intention to move abroad within the next 12 months.<sup>13</sup> In addition to the question on migration intentions, a number of socioeconomic characteristics are available in the data, most importantly gender, age and education<sup>14</sup>. Respondents are further asked about the total income of their household, their employment status and whether they receive remittances. In addition, there are a number of questions that address respondents' trust in national and international institutions (e.g. national government, police, EU). For a complete list and descriptions of variables used in the regression analysis please refer to table A1 in the annex and for a table containing the number of observations per country entering the descriptive analysis please refer to the online appendix.

A descriptive analysis of migration intentions among individuals of working age (aged 25 to 64; all CESEE countries) reveals that approximately 8.3% of them intend to emigrate. Migration intentions are considerably more common among younger cohorts – 13.3% of the 25- to 39-year-olds intend to emigrate, while only 5.4% of those aged 40 to 64 do so – and among men (chart 1).<sup>15</sup> When distinguishing between different levels of education, we do not find noteworthy differences in migration intentions, in particular among the younger working age population. For all education groups, however, migration intentions decline with age (chart 2).

<sup>11</sup> It might seem that greater trust in foreign institutions increases migration intentions, where in fact migration intentions might cause greater trust in foreign institutions. The opposite might hold for domestic institutions.

<sup>12</sup> The OeNB Euro Survey covers six EU countries (Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania) and four non-EU countries (Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia).

<sup>13</sup> The precise wording of the question is the following: "Do you intend to move abroad within the next 12 months?". The possible responses are "yes," "no," "don't know," and "no answer." All those that responded "don't know" or "no answer" were excluded from the analysis. It should be noted that we cannot clearly distinguish between temporary and permanent migration.

<sup>14</sup> Information on education is retrieved based on categories of the UNESCO's International Standard Classification of Education (ISCED 1997) (also "don't know" and "no answer" are possible responses), which are combined to form three groups: low (primary), medium (lower and upper secondary, post-secondary but non-tertiary) and high education (first and second stage of tertiary).

<sup>15</sup> Raggl (2017) uses the 2014 wave of the OeNB Euro Survey to study migration intentions and finds that 9.1% of the working age population in CESEE had the intention to emigrate in 2014. Migration intentions on the country level as reflected in the two waves correlate highly – the correlation coefficient is 61%. However, the migration intentions identified in the two waves cannot be compared in a sensible manner, as the wording of the underlying survey question was revised between 2014 and 2017. In the 2014 wave, the question addressed migration intentions of the respondent and the other household members, leading to a likely overestimation of migration intentions, especially among older age groups. Migration intentions among the younger members of the working age population – where a lower bias can be expected in the 2014 wave – indicate an increase in migration intentions between 2014 and 2017. Please refer to the online appendix for a more detailed comparison of the two waves.



Chart 1

### Migration intentions broken down by age and gender – CESEE average

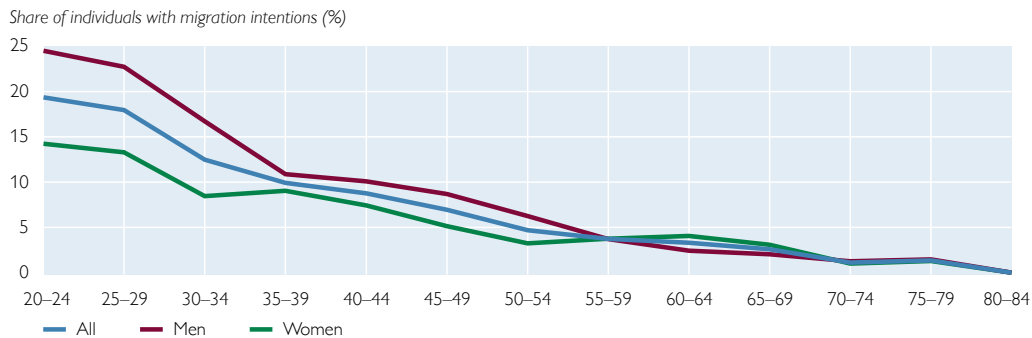
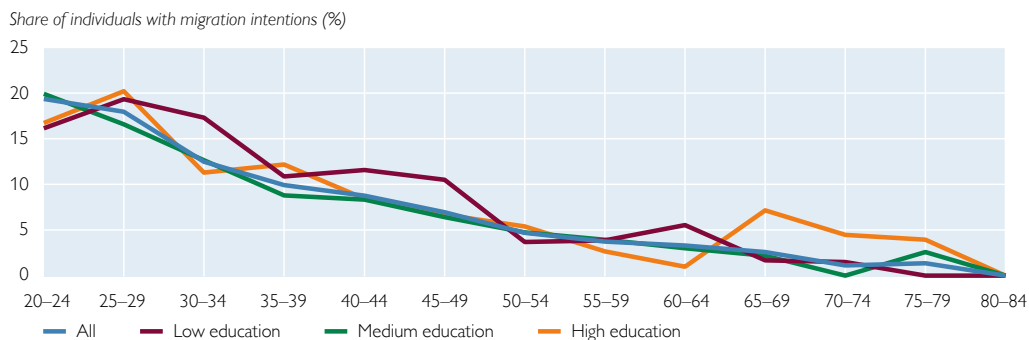


Chart 2

### Migration intentions broken down by age and education – CESEE average



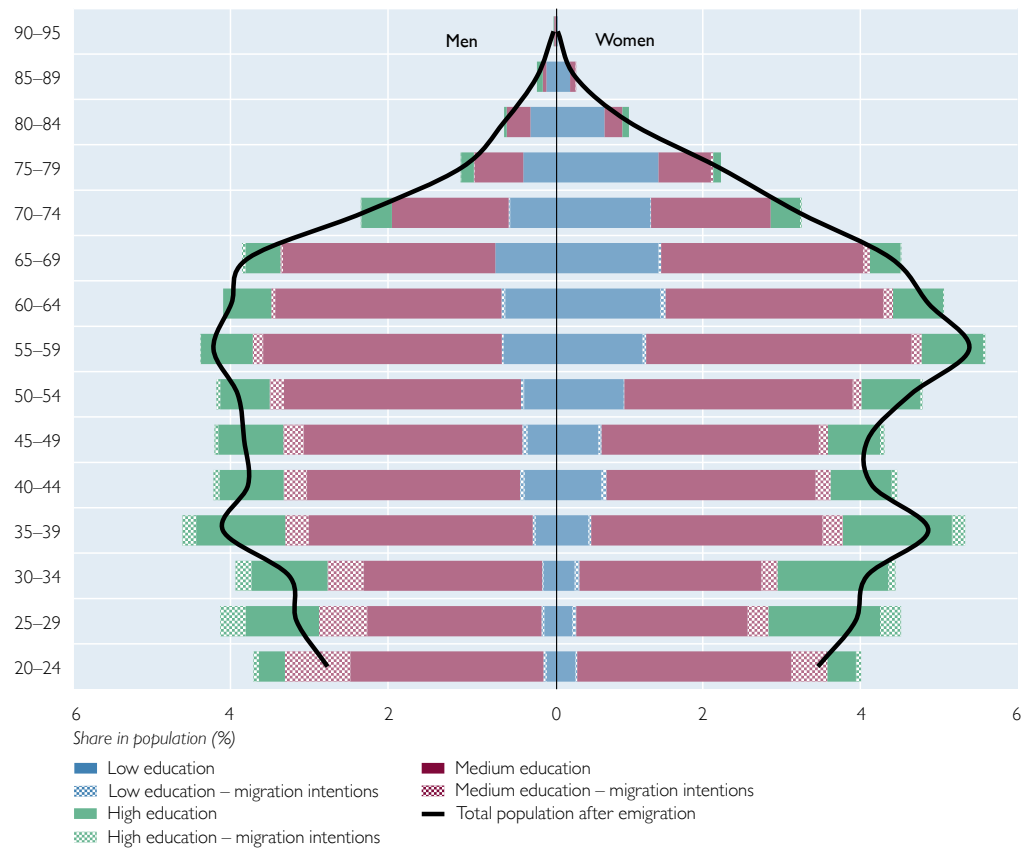
The population pyramid in chart 3 displays the population structure of an average CESEE country broken down by gender, age, education and migration intentions. The black line indicates a hypothetical population pyramid that could be observed if all migration intentions were realized – immediately and contemporaneously, *ceteris paribus*. Clearly, if everyone intent on leaving the country were to actually emigrate, this would significantly alter the population structure. The remaining population would be diminished, older, and the share of women would increase. The educational decomposition would remain similar.

The share of people with migration intentions is rather heterogeneous across countries (table 1<sup>16</sup>). It is higher in non-EU CESEE countries than in CESEE EU countries: FYR Macedonia exhibits the highest share of individuals with migration intentions in the working age population (25- to 64-year-olds). Almost one-fifth of this age group intends to emigrate. Also, in Albania and Serbia, the shares of people with migration intentions in the working age population are above the CESEE average of 8.3%. They amount to 11.8% and 10.4%, respectively. In Bulgaria and in Bosnia and Herzegovina, the share of individuals of working age intent on

<sup>16</sup> Please refer to the online appendix for a table on migration intentions broken down by country, gender and education for the young working age population (25- to 39-year-olds).

### Migration intentions in the CESEE population broken down by gender, age and education

Age group (years)



Source: OeNB Euro Survey 2017.

emigrating is close to the overall CESEE average of 8.3%. Migration intentions are very similar in Romania, Croatia and Hungary, where between 6.6% and 6.8% intend to emigrate. In Poland and in the Czech Republic, migration intentions are low: only 4.3% and 1.9% of the working age population intend to emigrate. Identifying the reasons for the differences in average migration intentions across countries would go beyond the scope of this study as we focus on the characteristics of individuals within a country that intend to emigrate. Institutional factors, e.g. EU membership, might play a role, however, but also the overall level of a country's economic development, its labor market situation, historic migration patterns and ties to other countries (networks) or the political environment.

Table 1 indicates (in columns 4 and 8) whether there are significant differences between men and women and between medium- and highly skilled individuals. Only in Hungary and in Bosnia and Herzegovina, migration intentions are significantly more common among the highly skilled.

Table 1

**Share of individuals aged 25 to 64 with migration intentions**

Country	Gender			Difference	Education			Difference
	All	Men	Women	Men vs. women	Low	Medium	High	Medium vs. high
Czech Republic	1.9%	1.7%	2.1%		0.0%	1.9%	2.7%	
Poland	4.3%	6.6%	2.1%	***	3.0%	4.4%	4.9%	
Hungary	6.6%	7.3%	6.0%		2.4%	4.8%	13.1%	**
Croatia	6.7%	8.7%	4.8%	*	6.5%	5.9%	10.0%	
Romania	6.8%	10.5%	3.6%	***	0.0%	7.0%	6.7%	
Bosnia and Herzegovina	7.7%	9.9%	5.8%		3.2%	7.8%	16.5%	**
<b>CESEE average</b>	<b>8.3%</b>	<b>10.1%</b>	<b>6.7%</b>	<b>***</b>	<b>8.0%</b>	<b>7.8%</b>	<b>10.2%</b>	<b>***</b>
Bulgaria	8.7%	10.9%	6.7%	*	7.4%	9.7%	6.7%	
Serbia	10.4%	11.1%	9.8%		6.7%	10.5%	13.2%	
Albania	11.8%	11.8%	11.8%		10.5%	11.8%	12.2%	
FYR Macedonia	17.8%	22.3%	13.4%	**	17.7%	18.9%	14.6%	

Source: OeNB Euro Survey 2017.

Note: Column 4 indicates whether the mean is statistically different between men and women, column 8 indicates whether the mean is statistically different between the medium- and high-skilled. Statistical significance is based on t-tests from robust OLS regressions of migration intentions on gender and education dummies, respectively. \*, \*\*, \*\*\* indicate a 10%, 5%, 1% level of significance, respectively.

## 5 Results

### 5.1 Probit estimations

Table 2 contains the marginal effects based on probit regressions of migration intentions on several groups of variables. The first column shows the relationship between migration intentions and sociodemographic characteristics. The results confirm the insights from the descriptive analysis: The likelihood of having migration intentions declines with age and is higher among men. Migration intentions among individuals with a medium or high level of skills are not significantly different from those found among low-skilled persons. The latter finding contradicts the common result of a positive selection of migrants, i.e. the finding that (prospective) migrants tend to be better educated than the remaining population (Chiswick, 1999; Chiquiar and Hanson, 2005; Liebig and Sousa-Poza, 2004). While we cannot provide a definite explanation for this finding, the following factors could be related to this result: First, highly educated individuals might be more likely to carry out their migration intentions. This could lead to higher emigration figures among the highly skilled although their migration intentions are not more frequent than those of individuals with lower levels of skills (see Docquier et al., 2014). Furthermore, in many of the countries under consideration, labor markets are increasingly tight, skill shortages are growing and wage growth is high (see for example Grieveson, 2018; Schreiner, 2018). This environment provides increasingly attractive labor market opportunities for highly skilled individuals in their home countries – and their intentions to emigrate in 2017 might be less pronounced than in the past. Finally, it should be emphasized that the results do not imply that migration intentions among the highly skilled are scarce, the findings merely indicate that migration intentions among them are not more frequent than among the low-skilled, once controlled for other variables.

The results in the first column of table 2 further show that being a member of a large family, i.e. having small children, being married and living in a relatively large household, reduces migration intentions. This result is most likely driven by

higher (monetary and nonmonetary) costs of migration for people with large families. The variable “size of town” becomes significant if more covariates are added. This variable appears to be positively correlated with income so that an omission of income leads to a downward bias of the effects of size of town. The general observation is that migration intentions are more common in towns that are larger (in relative terms).

In the second column, variables that describe the economic situation of the individuals/the households are added. Individual unemployment is strongly correlated with migration intentions – an effect that holds across all specifications.

Table 2

### Marginal effects after probit estimations

	Sociodemographics	Economic factors	Wealth	Region	Networks	Trust
Age	-0.00330*** (-15.48)	-0.00319*** (-13.86)	-0.00320*** (-13.99)	-0.00320*** (-14.80)	-0.00302*** (-12.16)	-0.00292*** (-11.08)
Medium education	0.0845 (0.88)	0.0121 (1.33)	0.0107 (1.18)	0.0122 (1.34)	0.0129 (0.86)	0.00641 (0.76)
High education	0.00965 (0.86)	0.00509 (0.45)	0.00286 (0.24)	0.00243 (0.21)	0.00590 (0.54)	0.00395 (0.38)
Female	-0.0249*** (-4.81)	-0.0224*** (-3.57)	-0.0211*** (-3.41)	-0.0206*** (-3.26)	-0.0223*** (-3.63)	-0.0231*** (-3.46)
PPCA: large family	-0.0134*** (-4.86)	-0.0135*** (-4.16)	-0.0150*** (-4.43)	-0.0153*** (-4.67)	-0.0153*** (-4.76)	-0.0150*** (-4.35)
Size of town	0.00199 (1.17)	0.00480*** (2.90)	0.00553*** (3.36)	0.00800*** (3.10)	0.00692*** (2.79)	0.00679*** (2.59)
Log(equiv. income)		-0.0502** (-1.97)	-0.0401 (-1.57)	-0.0416* (-1.66)	-0.0325 (-1.36)	-0.0251 (-0.87)
Log(equiv. income squared)		-0.00412* (-1.66)	0.00273 (1.08)	0.00375 (1.51)	0.00275 (1.14)	0.00181 (0.66)
Unemployed		0.0468*** (4.84)	0.0495*** (5.26)	0.0369*** (4.45)	0.0374*** (4.55)	0.0403*** (5.13)
PPCA: wealth			0.0117** (2.56)	0.0118*** (2.72)	0.00465 (1.20)	0.00554 (1.37)
PCA: prosperous region				-0.0139*** (-3.40)	-0.0108*** (-2.65)	-0.00908** (-2.05)
PCA: developing region				0.00744** (2.19)	0.00428 (1.28)	0.00497 (1.40)
PCA: depressed region				0.0142*** (2.73)	0.00979* (1.96)	0.00659 (1.14)
Direct networks					0.0476*** (4.52)	0.0462*** (3.88)
PCA: indirect networks					0.0158*** (4.58)	0.0160*** (4.29)
PPCA: modern communication devices					0.00783** (2.38)	0.00870*** (2.59)
PCA: trust in local institutions						-0.00422* (-1.67)
PCA: trust in the EU						0.0117*** (3.89)
N	9,545	7,288	7,193	7,152	7,106	6,583

Source: Author's calculations based on OeNB Euro Survey 2017.

Note: t statistics in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The dependent variable is binary and takes a value of 1 if an individual has the intention to emigrate and 0 otherwise. All specifications include a full set of country dummies. Reported standard errors are clustered at the regional level. The addition, “PCA” or “PPCA” in a variable name indicates that the variable is a component taken from a principal component analysis or polychoric principal component analysis.

When unemployed, an individual's probability to have migration aspirations is by 4 to 5 percentage points higher than when not unemployed. The relationship between (log equivalized household) income and migration intentions is not robust: While in the sparse setting of column 2, a nonlinear, u-shaped relationship is found – those with medium levels of income are predicted to have the lowest migration intentions – the relationship becomes insignificant after controlling for wealth (column 3). We also do not find any evidence for a robust linear relationship between income and migration intentions. Unemployment and also a measure of the wealth of the respondent's household appear to be more important than the level of household income. The wealth measure, the first component based on a PPCA on various variables related to real estate ownership, is positively related to migration intentions. Controlling for personal networks and networks in the region of residence changes this relationship, however. In column 4, three variables related to the economic development of the region of residence are added to the specification. The findings suggest that the more prosperous a region is, the lower migration intentions are within its population. Accordingly, the more depressed a region is and/or the lower its degree of development – both characterized by high unemployment, low income and low levels of economic activity – the more common migration intentions will be among its residents. The difference between developing and depressed regions is the growth in economic activity. Growth rates are low in depressed and high in developing regions. This difference might explain the higher level of significance of the coefficient of depressed regions. In column 5, direct and indirect network variables – approximated by the receipt of remittances – are added. Our findings suggest that both are significantly positively related to migration intentions. Individuals with direct networks more frequently have migration intentions, and so do individuals with indirect networks, i.e. persons living in regions where many individuals have direct networks. This finding suggests that prospective migrants are likely to move to countries previous migrants have emigrated to, and destination country patterns might prevail.

The estimations further imply that individuals that use modern communication devices are more likely to have migration intentions, even after controlling for age (and networks). The coefficients of all three variables are prone to be biased and should be interpreted with particular care (see section 3.3).

In the last column of table 2, principal components representing trust in national institutions and trust in the EU are added. High levels of trust in the national government are associated with a low share of migration intentions, while high levels of trust in the EU – most of the major destination countries are EU countries – are associated with widespread migration intentions.

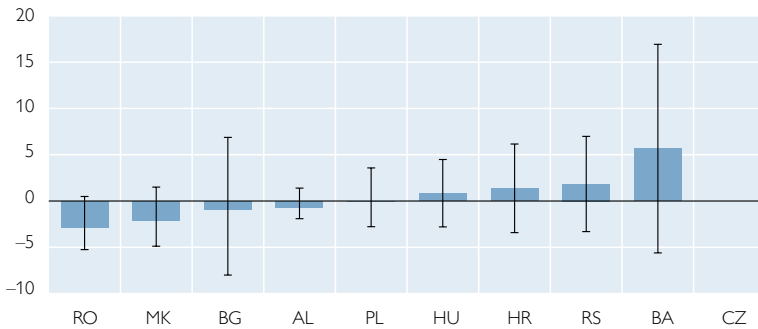
A decomposition of the pseudo R-squared provides insights into the relative contribution of the different variable groups to the overall explained variation (Shorrocks-Shapley decomposition): approximately two-thirds of the pseudo R-squared can be attributed to sociodemographic factors and to network effects. Both economic factors and country-fixed effects each account for 10% of the explained variation, and regional factors and trust variables for 9% and 6%, respectively (see chart in section 6 of the online appendix).

The numbers of observations that enter the final specification in column 6 are relatively broadly spread across countries (see online appendix). One exception is Bosnia and Herzegovina: Due to a large share of missing values in the income

Chart 4

### Marginal effect of being highly skilled

Percentage points; black bars indicate 95% confidence interval



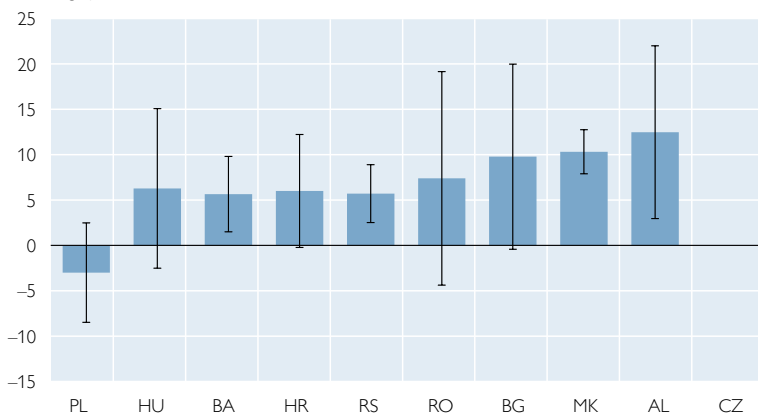
Source: OeNB Euro Survey 2017.

Note: The blue bars show the average marginal effects of being highly skilled on the probability of having migration intentions. The marginal effects are calculated based on probit estimations according to the specification in column 6 in table 2 using data for each country separately.

Chart 5

### Marginal effect of being unemployed

Percentage points; black bars indicate 95% confidence interval



Source: OeNB Euro Survey 2017.

Note: The blue bars show the average marginal effects of being highly skilled on the probability of having migration intentions. The marginal effects are calculated based on probit estimations according to the specification in column 6 in table 2 using data for each country separately.

variable, only about one-third of the observations for the country enter the regression analysis and the country is relatively underrepresented in the probit estimations.

## 5.2 Heterogeneous effects

The results discussed above do not allow for heterogeneous effects across countries. To gain further insights, we ran specification 6 in table 2 separately for each country.<sup>17</sup> In none of the countries do we find a significant relationship between migration intentions and educational attainment (chart 4). Being unemployed, however, increases the likelihood of having migration intentions significantly in a number of countries (chart 5). The strongest effects are found in Albania, FYR Macedonia and Bulgaria (where the latter effect is only significant at a 10% significance level): being unemployed, increases the probability of having migration intentions by 10 percentage points or more.

The country-specific estimations also show that networks are particularly important in Bosnia and Herzegovina, Croatia and FYR Macedonia. In these countries direct networks are associated with more frequent migration intentions at a statistically significant level. In the other countries we do not find significant effects at the country level (chart 6).

In addition to accommodating heterogeneous effects across countries, we use interaction terms to study the dependence of effects on other variables (in the CESEE aggregate)<sup>18</sup>. Our findings suggest that individual unemployment becomes a stronger push factor the lower the level of development of the region of residence

<sup>17</sup> In the Czech Republic, the number of individuals in the sample that have migration intentions is small. None of the individuals with migration intentions are unemployed and none of them have a low level of education. The two variables thus explain failure/success (0/1) perfectly in a probit regression with Czech data and no estimates can be obtained for this country. The overall number of observations from the Czech Republic that enter the regression analysis is high (see online appendix).

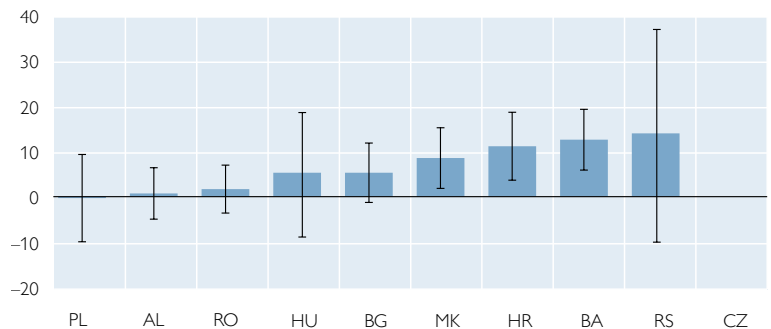
<sup>18</sup> The results of these regressions are not included here due to space limitations, but they are available from the author upon request. A graphical representation is provided in the online appendix.

Chart 6

(measured by the principal components that represent depressed and developing regions, respectively). In the case of individuals living in regions that are not depressed or not characterized as developing regions, migration intentions cannot be significantly related to individual unemployment. In other words, if regional development is sound, the push effect of individual unemployment is reduced, whereas heavily depressed regions intensify the push effect of unemployment. Thus, an isolated consideration of individuals' unemployment and regional development is not sufficient – they should be looked at in combination.

### Marginal effect of having direct networks

Percentage points; black bars indicate 95% confidence interval



Source: OeNB Euro Survey 2017.

Note: The blue bars show the average marginal effects of being highly skilled on the probability of having migration intentions. The marginal effects are calculated based on probit estimations according to the specification in column 6 in table 2 using data for each country separately.

## 6 Conclusions

We use data from a recent wave of the OeNB Euro Survey, collected in fall 2017, to study migration intentions in ten CESEE countries.

Based on these survey data, we find that, on average, 8.3% of individuals aged 25 to 64 intend to emigrate within a year. Migration intentions in the region are more common among young people and men. In the age group of 25- to 39-year-olds, 13.3% intend to emigrate. In most countries, average migration intentions do not differ significantly across low-, medium- and high-skilled groups, especially in the younger working age population. Furthermore, we find considerable differences in migration intentions across CESEE countries: Migration intentions in the working age population are less frequent in CESEE EU countries (5.8%) than in non-EU CESEE countries (11.9%). The share of respondents who intend to migrate is highest in FYR Macedonia (17.8%), Albania (11.8%) and Serbia (10.4%) and lowest in the Czech Republic (1.9%) and Poland (4.3%).

The results of probit estimations show that gender, age and household structure are significantly related to migration intentions. Young respondents – more men than women – that are not married and do not have children are particularly likely to aspire to emigrate. Education is not statistically significant – neither at the CESEE aggregate level nor when the effect is estimated separately for each country. We find that individual unemployment is a robust predictor of migration intentions in CESEE, while (equivalized) household income does not exhibit a clear impact. Besides individual economic factors, the level of regional development also plays an important role. Individuals living in prosperous regions less frequently intend to migrate, while individuals living in developing or depressed regions more commonly have migration intentions. The estimations further reveal important interactions between individual unemployment and regional economic development: Living in an economically depressed or developing region – characterized by a low level of economic activity, high unemployment and low incomes in the PCA – increases the push effect of individual unemployment. Similarly, being a resident of a region that shows no signs of economic depression reduces the migration-enhancing effect of unemployment, which even turns insignificant. Also (direct and indirect) networks are strongly related to migration intentions. This finding suggests that

the historic destination country patterns are likely to persist: networks abroad, approximated by the receipt of remittances, reduce the cost of migration and thus prospective migrants are likely to emigrate to a country previous emigrants from their country have moved to. Finally, variables that measure trust in institutions suggest that trust in national institutions is associated with relatively rare, trust in the EU with relatively widespread, migration intentions.

The analysis provides a recent picture of migration aspirations in CESEE countries and the characteristics of prospective emigrants. Due to a lack of appropriate instrumental variables, however, we are not able to establish causality between individual characteristics (most importantly education, networks and trust in institutions) and migration intentions. Our estimates merely constitute conditional correlations, and more research in this field is needed to establish causal links.

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## Annex

Table A1

### List of variables used in the probit estimations

Variable	Description
<b>Dependent variable</b>	
Migration intentions	Dummy variable that takes a value of 1 if respondent intends to move abroad within the next 12 months; respondents stating "don't know" or "no answer" are excluded from the analysis.
<b>Sociodemographic factors</b>	
Age	Age of respondent in years.
Medium education	Dummy variable that takes a value of 1 if respondent has medium-level education (i.e. lower and upper secondary, post-secondary but non-tertiary education).
High education	Dummy variable that takes a value of 1 if respondent has high-level education (i.e. first and second stage of tertiary education).
Female	Dummy variable that takes a value of 1 if respondent is female.
PPCA: large family	Principal component that represents members of large families, i.e. individuals who live in relatively large households, have small children and/or are married.
Log(size of town)	Logarithm of the size of the town of residence.
<b>Individual economic factors</b>	
Log(equiv. household income) [squared]	Logarithm of the equivalized household income [and its square]; equivalized household income is computed using a weight of 1 for the first adult in the household, 0.5 for each additional person aged 13 and above and 0.3 for each child under the age of 13 <sup>19</sup> .
Unemployment	Dummy variable that takes a value of 1 if respondent is not working but seeking a job.
PPCA: Wealth	Principal component that represents real estate ownership (ownership of residence, secondary residence, other real estate and other land, and also ownership of a car).
<b>Regional development</b>	
PCA: prosperous region	Principal component that represents regions with high income, low unemployment, high activity and moderate growth in activity. Regional income is calculated as the (survey-weighted) average of equivalized household income. Regional unemployment is calculated based on individual unemployment under the application of survey weights. Activity is measured as the logarithm of night light intensity in 2013. Growth in activity is measured as the log-difference in night light intensity between 2011 and 2013. All variables are calculated at different levels of regional aggregation: For night light data, we use a 5km, 10km and 20km radius around the respondent's residence and the NUTS 2 level; average income and unemployment are aggregated to the PSU and the regional level. PSU is the primary sampling unit and represents households in close proximity of the respondent, the regions are defined based on NUTS 2 classifications – or more finely in some countries (HR, BG, MK).
PCA: developing region	Principal component that represents regions with low income, high unemployment, moderate activity but high growth in activity.
PCA: depressed region	Principal component that represents regions with low income, high unemployment, moderate activity and low/negative growth in activity.
<b>Network effects</b>	
Direct networks	Dummy variable that takes a value of 1 if respondent and/or his/her partner receives remittances from abroad.
PCA: indirect networks	Principal component that represents high shares of individuals that receive remittances in the respondent's region of residence. The shares of remittance receivers at the PSU level and at the regional level enter the PCA.
PPCA: modern communication device	Principal component that represents individuals that use modern communication devices (owns a PC, has access to the Internet at home, owns a mobile phone).
<b>Trust in institutions</b>	
PPCA: trust in local institutions	Principal component that represents trust in national institutions (trust is measured on a Likert-type scale; trust variables are demeaned before they enter the PCA).
PPCA: trust in the EU	Principal component that represents trust in the EU.

<sup>19</sup> Instead of using the age of 13 as a cutoff between a weight of 0.5 and 0.3 it is more common to use the age of 14. With our data we can only use 13 or 16 as a cutoff age. In order to keep the difference to the common procedure small, children under 13 receive a weight of 0.3 and individuals aged 13 and above receive a weight of 0.5.