

# The role of public services quality in shaping migration intentions in Central, Eastern and Southeastern Europe

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*What role does the quality of public services play in shaping migration intentions? Using OeNB Euro Survey data collected in 2018, we study the impact of individual perceptions of public services quality on individuals' migration intentions in ten Central, Eastern and Southeastern European (CESEE) countries. We apply ordinary least squares (OLS) as well as instrumental variable (IV) estimations, using externally merged infrastructure-related variables and individuals' opinions on the adequacy of public spending on services as instrumental variables. Our findings suggest that dissatisfaction with the quality of public services in the home countries increases the likelihood of individuals having migration intentions. Broken down by the type of public service, we find that dissatisfaction with social security, health, public infrastructure and with services that target businesses and regional development is associated with higher migration aspirations. Furthermore, for people with young children, we see a higher effect on migration intentions resulting from dissatisfaction with education, health and public safety. For self-employed individuals, the effect of dissatisfaction with public services that address companies and regional development is particularly important. The results further confirm that sociodemographic characteristics, economic factors and network effects are closely associated with the aspiration to move abroad.*

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In Europe, long-term demographic trends continue to follow different patterns reflecting past geopolitical divisions: we see population growth in Western, Southern and Northern Europe and population decline in Central, Eastern and Southeastern Europe (CESEE). The decrease in population in CESEE since 1990 results from a combined effect of natural population decrease (i.e. deaths exceeding births) and emigration. While some countries recently experienced moderate population growth (Hungary, Czechia), projections suggest that the observed declining population trends will continue over the next decades due to both natural change and net migration (VID and IIASA, 2020).

In a recent IMF report, Batog et al. (2019) comprehensively assess the implications of demographic developments in CESEE on labor supply, age-related fiscal spending and on productivity and the prospects for economic growth in the region. They conclude that without mitigating policies, growth and convergence toward Western European living standards would slow down considerably. Implementing

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policies that increase labor supply is one way to counteract demographic developments. But as it is unlikely that this is sufficient, a more comprehensive approach that also addresses emigration, immigration and return migration is needed.

This study attempts to contribute to a better understanding of why individuals intend to emigrate from their home country and to provide insights for designing policies that increase people's willingness to stay in their home countries (and/or to return or move to CESEE from abroad). Such policies can be important tools to counteract labor force declines, human capital deterioration and challenged public finances, and, as a consequence, to remove obstacles to continued and sustainable convergence to Western Europe. Following up on previous research dedicated to understanding why people in CESEE want to emigrate, we address the link between the perceived quality of public services – social security, public infrastructure, education, health, defense and public safety, regional development measures – and individuals' migration intentions.

We use individual-level data from the 2018 wave of the OeNB Euro Survey, which covers ten CESEE countries. Making use of a series of questions on public debt, we investigate the relationship between the perceived quality of public services and individual migration intentions. Our data allow us to control for a rich set of covariates that have previously been identified as relevant for the emergence of migration intentions and that range from sociodemographic and economic factors to networks and the trust in local and EU institutions. In addition, we take advantage of the fact that the data are geo-referenced and use matched data on nighttime light combined with regional averages of unemployment and income to control for the level of development in the surroundings of respondents' places of residence. We use instrumental variable estimations in order to address identification issues that can stem from the simultaneity of migration intentions and contentment with public services and from the omission of factors that influence both these variables. As instrumental variables we use exogenous data on road density as well as land coverage in individuals' neighborhoods as measures of infrastructure, and we further employ individuals' assessment of the adequacy of public spending on public services, a variable that is covered in the survey (an instrumental variable).

The remainder of this paper is structured as follows. Section 1 provides an overview of related literature. The empirical setting is explained in section 2. Section 3 summarizes the data and provides descriptive statistics of the key variables. In section 4, the estimation results are presented, and section 5 concludes. Additional material is included in the annexes.

## 1 Literature

Traditionally, differences in incomes and labor market opportunities across countries are seen as key determinants of migration, and a large body of literature focuses on this link. Also, the relationship between education and migration has received a lot of attention (Borjas, 1987; Chiswick, 1999; Chiquiar and Hanson, 2005), and the importance of networks abroad has repeatedly been established (Docquier et al., 2014; Manchin and Orazbayev, 2018).

More recently, nonpecuniary factors feature more prominently in studies on the determinants of migration intentions. Otrachshenko and Popova (2014), for example, relate life satisfaction measures to individual migration intentions. Using data from Western and Central Europe, they find that individuals that are dissatisfied

with life are more likely to have the intention to emigrate. Similarly, van Dahlen and Henkens (2013) show for the Netherlands that discontent with the quality of the public domain (with regard to mentality, space and overcrowdedness, nature, pollution, crime, etc.) is an important set of factors for explaining migration intentions. In a recent study, Williams et al. (2018) use data from nine European countries – among them Romania as the only country also covered in our analysis – and find that although socioeconomic factors have strong explanatory power, nonpecuniary factors also play a certain role. Several related studies work with different waves and country sets of Gallup World Poll (GWP) data to understand what drives individuals' migration intentions. Dustmann and Okatenko (2014) use GWP data for sub-Saharan Africa, Asia and Latin America (2005, 2006) to study migration intentions. They find that contentment with local amenities, such as public services and public security, are key determinants of migration intentions and explain a considerable share of variation in migration intentions. Manchin and Orazbayev (2018) focus predominantly on the impact of networks but confirm that satisfaction with local amenities and local security decreases the probability of people moving away from the current region of residence (150 countries, GWP data, 2010-2013). In its flagship Transition Report (2018), the EBRD highlights the role of satisfaction with local amenities, using GWPs data for the EBRD region (2010–15). Further related studies addressing this link often use only one country and study internal migration (see for example Chen and Rosenthal, 2008). Studies by Tran et al. (2019, 2021) also address factors that are related to political outcomes and institutions, focusing on the impact of institutional quality and institutional quality differentials between host and origin countries on return migration to Vietnam. Similarly, Etling et al. (2018) look into the relationship between political discontent and migration intentions in the Arab Mediterranean region.<sup>2</sup>

This paper contributes to the literature in several ways. It concentrates on a region that has been faced with particular challenges related to demographic change and emigration. Furthermore, the data we use allow us to put a clear focus on public services, that is, factors that can be changed by policymakers, as opposed to studying the impact of fairly vague concepts, such as amenities. In addition, we take into account the possible endogeneity of the variable measuring dissatisfaction with public services in an attempt to limit biased coefficient estimates.

## 2 Empirical setting

### 2.1 OLS estimations

We use ordinary least square (OLS) estimations to address the impact of individuals' assessment of public services quality on their migration intentions, controlling for a range of different factors that have been shown to be relevant in this setting (see Raggl, 2019, for example).

<sup>2</sup> A related strand of the literature deals with so-called “welfare migration,” where the location choice of migrants is related to the generosity of the welfare system in the country of destination (see Giulietti and Wahba, 2013, for an overview). The empirical evidence for the existence of this so-called welfare magnet hypothesis is mixed, and when such magnet effects are found, they are often very small. In contrast to this literature strand, which deals with the welfare state's role as a possible pull factor for migration, this study focuses on public services quality acting as a possible push factor.

In particular, we estimate the following basic relationship:

$$m_i = \alpha_r + \beta_d d_i + \sum_{j=1}^J x_{ij}^{Socio} \beta_j^{Socio} + \sum_{k=1}^K x_{ik}^{Econ} \beta_k^{Econ} + \sum_{l=1}^L x_{il}^{Region} \beta_l^{Region} + \sum_{m=1}^M x_{im}^{Network} \beta_m^{Network} + \sum_{p=1}^P x_{ip}^{Trust} \beta_p^{Trust} + \epsilon_i$$

$m_i$  is a binary variable that takes a value of 1 if an individual has the intention to move abroad within the next 12 months,  $d_i$  is a measure of dissatisfaction with public services and the key variable of interest.  $x_{ij}^{Socio}$  are  $J$  variables that belong to the group of sociodemographic characteristics,  $x_{ik}^{Econ}$  represents the group of  $K$  economic factors,  $x_{il}^{Region}$  the  $L$  regional characteristics,  $x_{im}^{Network}$  the  $M$  variables capturing network effects and  $x_{ip}^{Trust}$  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 the same for all individuals in a country, such as institutional characteristics, the political environment, historical ties to other countries, geographic location and the like.  $\epsilon_i$  is the remaining error term. Standard errors are clustered at the regional level in countries where the regions are defined according to NUTS 2 or a finer classification (HR, BG, MK).

We would expect individuals who are dissatisfied with the provision of public services to have stronger migration intentions *ceteris paribus*. These findings would be in line with other empirical studies that highlight the relevance of non-pecuniary factors for the emergence of migration intentions.

The data allow us to study coefficient heterogeneities along different dimensions. First, the magnitude of the effects might differ by country. The ten countries in the sample differ in size, average income levels, EU membership, etc., and the importance of public services quality for migration intentions could vary across countries. We assess these possible heterogeneities by interacting the dissatisfaction variable with country dummies. Second, distinguishing by the type of service – social security, public infrastructure, education, health, defense and public safety as well as economic development – allows us to study whether the perceived quality of certain services has a higher impact on migration intentions than that of other services. We would expect *ex ante* that the magnitude of the effects could be related to the exposure of an individual to a specific service, however, and therefore heterogeneous effects with respect to the individual and household situation can be assumed. This exposure can be empirically approximated with interaction terms that allow, for example, the effect of dissatisfaction with education, health or social security services to differ between individuals with (school-aged) children and those without. Similar interactions are to be tested between being unemployed or retired and reacting to the quality of social security services or between being self-employed and public economic development (and business support) services.

Regarding the sign of the effects of the control variables, no large deviations from Raggl (2019) are expected: Migration intentions are expected to be stronger among the young and among men, and weaker for respondents who are married and have children (represented by a principal component based on marital status and the number of children, see below). Furthermore, being unemployed is expected to raise migration intentions, and, *ex ante*, a similar effect would be expected for

income (the latter has not been found in Raggl, 2019). In addition, we anticipate that having networks abroad increases migration intentions, and trust in domestic (foreign) institutions is associated with weaker (stronger) migration intentions. Apart from being interesting in its own right, the trust variables can also help capture people's general satisfaction with the institutional situation in the home country and can act as an important proxy for this otherwise unobservable factor.

As there is a large number of covariates and some of them are highly correlated with each other, we use (Polychoric) Principal Component Analyses, (P)PCA, to reduce the dimensionality of the data (see box below). For a full list and description of the variables included in the estimations, please refer to table B1 in annex B.

Box

### **(Polychoric) principal component analysis, (P)PCA**

*As in an earlier study on migration intentions (Raggl, 2019), we use (polychoric) principal component analysis to reduce the dimensionality of certain groups of covariates. Some groups of covariates contain variables that are highly correlated with each other; including all of them in a regression could cause multicollinearity issues. If we only use a selection of variables that are believed to be relevant, potentially important information might be omitted from the analysis. (P)PCA is a method that reduces the dimensionality of the data while keeping a large part of the information they contain. The method dates back to works by Pearson (1901) and Hotelling (1933). It identifies the linear combination of the variables that accounts for the greatest variance in the data. The first principal component is the linear combination of the original variables that accounts for the largest share of the variance. The second principal component is orthogonal to the first and contains the largest part of the remaining variance, etc. The analysis identifies as many components as variables are used, and if all components are used in a subsequent regression, nothing would be gained vis-à-vis including all the variables. There is no binding rule on how to decide how many components should be used in a subsequent analysis, but a general rule of thumb is that components with an eigenvalue (EV) greater than 1 should be included (Kaiser rule, scree test). As many of our variables are discrete, either binary or based on a Likert-type scale, we use polychoric PCAs (PPCAs) for these cases. Kolenikov and Angeles (2004) developed this method for discrete variables.*

The table below lists the groups of variables for which we perform (P)PCAs and the components we use in the regressions.

Table

### Groups of variables and components used in the regressions

Group of variables	Variables included	Component(s) used	Eigenvalue	Share of variation explained
Contentment with public services	Dissatisfaction with social security, public infrastructure, education, health, defense and public safety, and economic development	Component that represents dissatisfaction with public services	3.6	60%
Household demographics	Household size, marital status of respondent, number of children aged 6 or younger, number of children aged 6 to 15	Component that represents large families	2.4	61%
Proxy for household wealth	Ownership of the main residence, a secondary residence, other real estate, other land and car ownership	Component that represents wealth holdings	2.3	47%
Direct networks abroad	Having friends and family abroad, receiving money from abroad	Component that represents direct networks	1.8	88%
Indirect networks abroad	Share of respondents in the primary sampling unit (PSU) and in the region that have friends and family abroad, share of respondents in the PSU and the region that receive remittances	Component that represents indirect networks	2.5	62%
Trust in institutions	Demeaned trust in the government, the police, domestic banks, foreign banks, the ECB and the EU	Component 1 that represents trust in local institutions	1.9	32%
		Component 2 that represents trust in EU institutions	1.4	23%

Source: Author's compilation.

Further (P)PCAs are performed to reduce the dimensionality of the instrumental variables (see table B1 in the annex).

## 2.2 Endogeneity issues and instrumentation

Establishing a causal relationship between personal perceptions of the quality of public services and migration intentions is not a trivial task. Individuals might be more dissatisfied with public services in their home countries if they have migration intentions and/or third – unobservable – factors might drive both the perceived quality of public services and the intention to emigrate. The result can be biased OLS estimates.<sup>3</sup>

We use instrumental variables (IV) as sources of exogenous variation and two-stage least squares (TSLS) estimations in addition to the basic OLS estimations to take into account potential endogeneity. In particular, we pursue two avenues for instrumentation. First, we use external measures of infrastructure in the close

<sup>3</sup> In case of a simultaneity bias, the sign of the bias is not straightforward to assess. Even under simplifying assumptions, for this particular application it cannot be determined, as for the assessment not only the expected signs of the impact of the quality assessment on migration intentions and the impact of migration intentions on the quality assessments need to be known, but also whether the product of the two exceeds unity (see for example Basu, 2015).

proximity of respondents' residences: road density (Meijer et al., 2018) and land use (artificial continuous and discontinuous urban fabric surfaces, based on CORINE land cover nomenclature). Broadly speaking, these variables can serve as proxies for general infrastructure in close proximity of individuals' residences and contribute to explaining contentment with the quality of public services based on the actual infrastructure in the neighborhood. These measures of infrastructure might also represent the employment opportunities in the region where the respondents live and which could compromise the exogeneity (and therefore validity) of the instruments if these employment opportunities are not controlled for in the main equation. But the main equation does control for regional economic development. It does so by including (PCA) measures that are based on nighttime light intensity in a respondent's neighborhood (measured for different radii around the respondents' residences) as well as on the average unemployment and income of respondents living nearby. Second, we make use of a question in the survey that asks about respondents' opinion on the adequacy of state spending on specific public services<sup>4</sup>. The idea is that the view of whether state spending on a particular service should be increased, maintained at the same level or decreased should not influence migration intentions per se, except through its influence on the perceived quality of public services. We use Kleibergen-Paap statistics and Hansen-J statistics to assess the relevance and exogeneity of the instruments and present first-stage results of the estimations in table D1 in the annex.

### 3 Data and descriptive evidence

We use the 2018 fall wave of the OeNB Euro Survey to address the link between the perceived quality of public services and migration intentions. The OeNB Euro Survey is an individual-level dataset created from a survey that has been conducted on behalf of the Oesterreichische Nationalbank (OeNB) in ten CESEE countries<sup>5</sup> since 2007. It covers approximately 1,000 randomly selected individuals per country and wave and focuses on topics such as (euro) cash holdings, saving behavior and debt, economic opinions and expectations, and experiences. In addition, socio-demographic and economic characteristics are collected, as well as information on individuals' migration intentions<sup>6</sup>. The 2018 survey wave contains a special module on public debt. Individuals were asked about their satisfaction with public services, in particular with social security, public infrastructure, education, health services, defense and public safety, and economic development (i.e. support for small and medium enterprises, etc.). In this study, we also employ data from external sources, which are merged with the Euro Survey: nighttime light, urban fabric measuring the biophysical coverage of the Earth (CORINE land cover data) and road density (Global Road Inventory Project, GRIP, dataset; Meijer et al., 2018) at individuals' places of residence. See table B1 in annex B for a complete list and description of the variables used for this study.

<sup>4</sup> The survey question refers to the following services: social security, public infrastructure, education, health, defense and public safety, and economic development; it reads as follows: "And in which of these areas, from your point of view, should the level of state spending be increased, maintained or lowered over the next 10 years?"

<sup>5</sup> The survey covers six EU countries (Bulgaria, Croatia, Czechia, Hungary, Poland, and Romania) and four non-EU countries (Albania, Bosnia and Herzegovina, North Macedonia and Serbia). For further information, please refer to <https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html>.

<sup>6</sup> The exact wording of the question is: "Do you intend to move abroad within the next 12 months?"

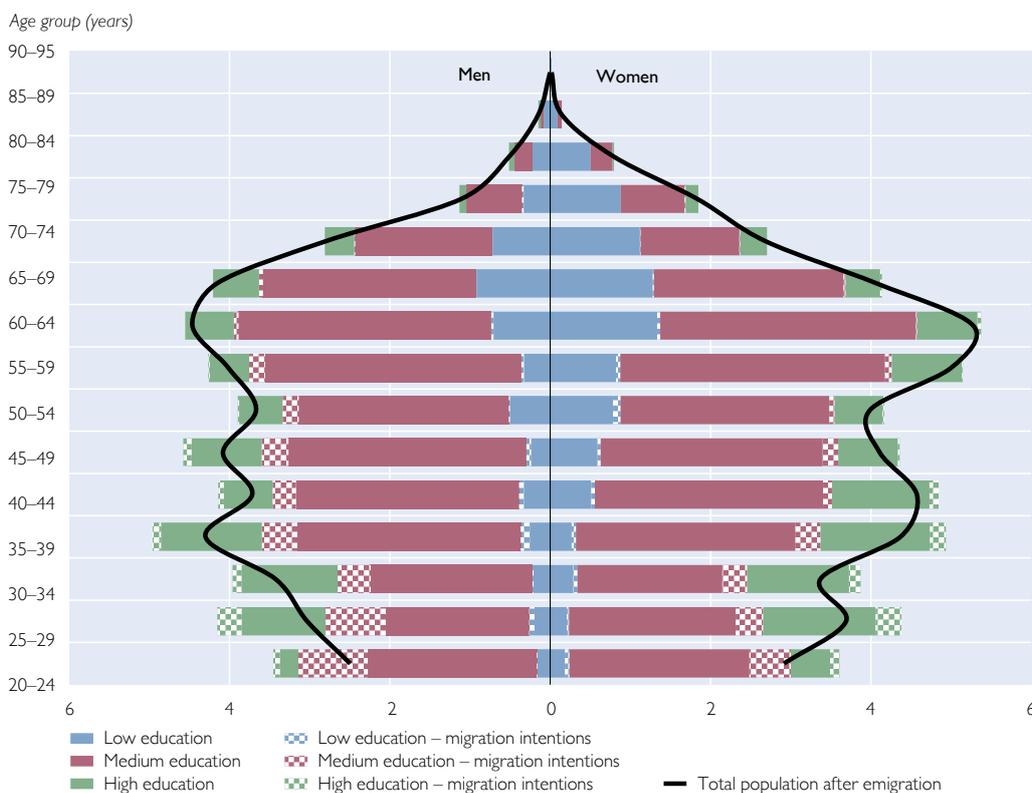
### 3.1 Migration intentions

The data show that in the ten CESEE countries covered, the share of individuals aged 25 to 64 who intend to move abroad within the next 12 months varies between 3% in Czechia and 20% in North Macedonia (see table A1 in annex A). When weighted by population size, the share of individuals with migration intentions in CESEE is approximately 6%, indicating that 6% of the population in CESEE intend to move abroad within the next 12 months. This population-weighted average takes into account that the ten countries differ greatly in size, but this also implies that the average is strongly driven by Poland and, to a smaller degree, Romania.

Pooling the data for all ten CESEE countries, the data indicate that approximately 9.1% of the respondents aged 25 to 64 indicate that they intend to move abroad within the next 12 months. This average refers to an “average CESEE country” and does not correct for the differences in the size of countries. We can further see in the data that the share of individuals with migration intentions varies considerably with age: among those aged 29 and younger, over 20% have migration intentions, among the 30- to 39-year-olds 12% to 13% intend to emigrate, and in the working-age population above 40 years of age, just above 5% intend to leave their home country. When we look at gender differences, the data indicate that migration intentions are more common among men than among women. This holds for both the pooled and the population-weighted CESEE averages as well as for most individual countries. With respect to educational attainment, the differences

Chart 1

#### Population pyramid (2018)



Source: Author's calculations based on OeNB Euro Survey data (2018) using pooled data for the ten CESEE countries covered.

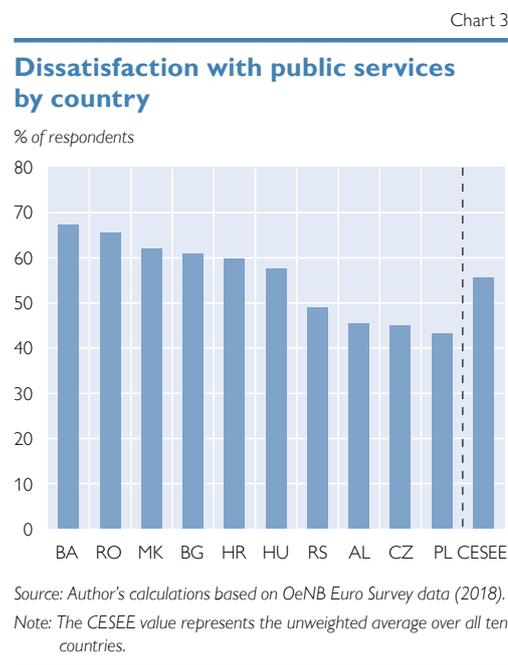
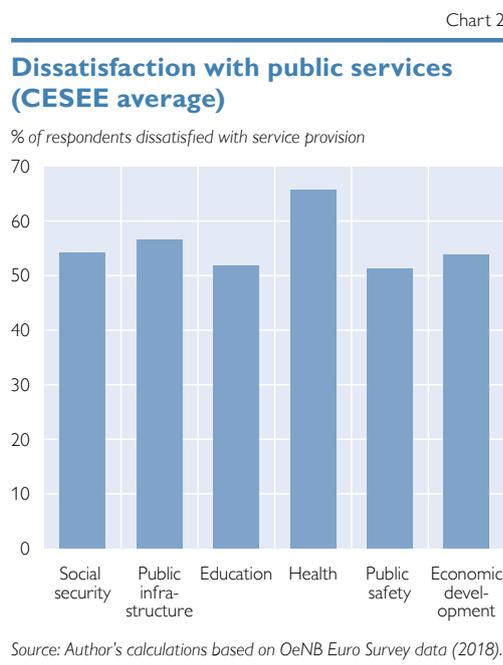
are less well defined. While, driven by Poland, the population-weighted average indicates higher emigration intentions among the highly skilled, this does not hold for individual countries (except for Serbia and Poland) or for the pooled average of respondents (see table A1 in annex A).<sup>7</sup>

Chart 1 shows the gender-age-education-migration nexus using a population pyramid for an average CESEE country (not population-weighted). The colors represent the level of education of the gender-age group and the hatched areas the part of the subgroup that has the intention to move abroad. The chart further indicates the shape of the pyramid that we would expect if the individuals with migration intentions actually left the country. The stylized pyramid drawn by the black line is more constrictive, and the tapering at the bottom indicates the shrinking and aging population structure prevalent in CESEE.

### 3.2 Dissatisfaction with the quality of public services

The special module on public debt in the 2018 wave of the OeNB Euro Survey contains a question on respondents' satisfaction with public services in the areas of social security, public infrastructure, education, health, defense and public safety, and economic development.<sup>8</sup>

The level of dissatisfaction with public services is high in CESEE. If we look at the average across all public service categories, more than 55% of respondents say



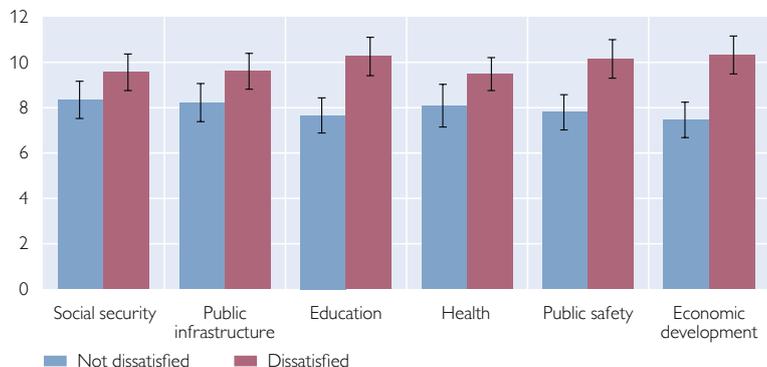
<sup>7</sup> We would caution against interpreting this finding as evidence that there is no (continued) brain drain. Migration intentions among the highly skilled are sizeable, albeit not statistically significantly higher than among those with lower levels of education. Also, the data describe migration intentions and not actual emigration. To the extent that the highly skilled are more likely to act on their intentions, actual migration can be relatively more frequent among those.

<sup>8</sup> The exact wording of the question is the following: "Consider the following areas where the state spends money. How satisfied are you with the delivery of public services in these areas in [YOUR COUNTRY]? Social security, public infrastructure, education, health, defense and public safety and economic development." The possible answers are the following: "Very satisfied, satisfied, dissatisfied, very dissatisfied, don't know, no answer."

Chart 4

### Migration intentions and dissatisfaction with public services

Share of individuals with migration intentions in % (with 95% confidence intervals)



Source: Author's calculations based on OeNB Euro Survey (2018).

that they are either strongly dissatisfied or dissatisfied with the public services provided in their country. Dissatisfaction is high for all service types, but particularly so for health services (see chart 2). As regards the differences across countries (chart 3), the data reveal that in Poland and Czechia, but also in Albania and Serbia, dissatisfaction is below the sample average. In Bosnia and Herzegovina, dissatisfaction is highest; here, an average of close to 70% of respondents are not satisfied with the provision of public services.

Chart 4 provides first descriptive evidence on the relationship between

people's contentment with public services and individuals' migration intentions after pooling these data for all ten countries. It shows that migration intentions are stronger among individuals that are dissatisfied with public services. This finding holds for all service categories and is particularly striking for education and economic development services. Among those not dissatisfied with education services, for example, 7.7% intend to emigrate, while among those dissatisfied with the public provision of education, over 10% intend to leave their home countries.

As such a correlation can be driven by other (observable or unobservable) factors, we estimate OLS regressions that control for sociodemographic, economic and regional characteristics, network effects, etc. as well as TSLS regressions to mitigate a possible bias in the estimates due to reverse causality and/or omitted variables.

## 4 Estimation results

### 4.1 OLS estimation

Table 1 shows the standardized coefficients of OLS estimations when the data for all countries are pooled. Starting out with a parsimonious specification in (1) that contains an index of the perceived quality of public services, sociodemographic characteristics and a full set of country dummies, we successively add sets of further covariates. The (standardized) coefficients of the PPCA index that measures the degree of dissatisfaction with public services are positive and significant in all specifications. They range between 0.046 and 0.064, i.e., a 1 standard deviation increase in the dissatisfaction index increases the likelihood of having migration intentions by 0.05 standard deviations. The standard deviation of the migration intentions variable in the sample is approximately 0.28 (and the mean approximately 0.08), i.e., a 0.05 standard deviation increase is equivalent to an approximately 1.4 percentage point increase in migration intentions. With an average of 8% of respondents in the sample having migration intentions, this is a nonnegligible effect.

With regard to other covariates, the results closely mirror Raggl (2019), a study that relies on OeNB Euro Survey data collected a year earlier, i.e. in 2017. Women are less likely to have migration intentions, just like respondents who have

small children or large families and who are married. Also, the likelihood of migration intentions declines with respondents' age<sup>9</sup>. Unemployment is a strong predictor of migration intentions, while (equivalent) income is not statistically significant. Respondents' wealth, approximated by a PPCA of the ownership of the main residence, a second or other residence, land and/or a car, is negatively associated with migration intentions. By contrast, migration intentions increase significantly if people have networks abroad, either direct and indirect ones, with the latter being measured by the networks of respondents living in close proximity (primary sampling unit and region).

#### 4.2 Heterogeneous effects

The estimates discussed so far present results that are based on the pooled sample of all ten countries in the survey, with country fixed effects having been controlled for. As the ten countries are very different, we interact the variable indicating dissatisfaction with public services with country dummies. The resulting country-specific coefficients are plotted in chart 5.<sup>10</sup> While the estimated coefficients in many countries are close to the pooled estimate (indicated by the horizontal line), for some countries they are insignificant. With the exception of Bosnia and Herzegovina, the effects in non-EU CESEE countries are above the pooled average. By far the highest impact is estimated for Albania, where the coefficient estimate is twice as high as for Romania and Serbia, the countries with the second- and third-highest coefficients.

This high effect for Albania might give rise to the presumption that the overall effect in the pooled sample might be driven by a single country (e.g. Albania). For robustness, we run ten pooled regressions, omitting one country in each regression. The resulting regression coefficients of the dissatisfaction with public services variable are plotted in chart C1 in annex C. It shows that while the overall coefficient is smaller when we omit Albania, the estimates remain statistically significant and positive in all specifications.

<sup>9</sup> The relationship between migration intentions and age is nonlinear, and the decline slows down with increasing age.

<sup>10</sup> Please note that these are coefficient estimates and not standardized coefficients as they are based on interactions between variables.

Table 1

**OLS estimation (standardized coefficients)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Socio-dem	Economic	Wealth	Regional	Networks	Trust	PSU-FE
PPCA: dissatisfaction with public services	0.049** (2.18)	0.062*** (2.82)	0.064*** (2.83)	0.061*** (2.92)	0.047*** (3.14)	0.047*** (3.03)	0.048*** (3.32)
Female	-0.053*** (-4.67)	-0.056*** (-4.74)	-0.056*** (-4.65)	-0.054*** (-4.53)	-0.055*** (-4.48)	-0.049*** (-4.17)	-0.046*** (-3.80)
Age	-0.498*** (-5.69)	-0.457*** (-5.04)	-0.438*** (-4.88)	-0.436*** (-4.85)	-0.439*** (-4.99)	-0.424*** (-4.86)	-0.378*** (-4.75)
Age sq.	0.251*** (3.25)	0.219*** (2.78)	0.203** (2.60)	0.202** (2.58)	0.212*** (2.71)	0.200** (2.53)	0.181** (2.44)
Medium education	0.004 (0.22)	0.011 (0.73)	0.011 (0.72)	0.017 (1.08)	0.041** (2.43)	0.045** (2.60)	0.058*** (2.70)
High education	-0.019 (-0.83)	-0.011 (-0.50)	-0.010 (-0.49)	-0.005 (-0.27)	0.029* (1.78)	0.031* (1.88)	0.035* (1.74)
PPCA: Large family	-0.066*** (-6.02)	-0.085*** (-6.44)	-0.084*** (-5.91)	-0.084*** (-5.91)	-0.079*** (-5.80)	-0.080*** (-5.43)	-0.055*** (-3.22)
Log(size of town)	0.007 (0.41)	0.031 (1.62)	0.029 (1.55)	0.033 (1.37)	0.010 (0.44)	0.011 (0.47)	
Log(equiv. income)		-0.164 (-0.59)	-0.163 (-0.58)	-0.110 (-0.39)	-0.189 (-0.73)	-0.231 (-0.91)	-0.326 (-1.17)
Log(equiv. income) sq.		0.092 (0.35)	0.090 (0.34)	0.093 (0.35)	0.129 (0.52)	0.158 (0.65)	0.287 (0.99)
Unemployed		0.101*** (5.77)	0.099*** (5.72)	0.090*** (5.05)	0.093*** (5.56)	0.089*** (5.23)	0.081*** (4.78)
PPCA: wealth			-0.002 (-0.08)	-0.005 (-0.25)	-0.039** (-2.14)	-0.029* (-1.67)	-0.029* (-1.73)
PPCA: direct networks					0.151*** (6.97)	0.148*** (6.51)	0.141*** (5.71)
PCA: indirect networks					0.137*** (4.09)	0.137*** (4.00)	
PCA: trust in local inst.						0.002 (0.13)	
PCA: trust in EU						0.037*** (2.95)	0.017 (1.05)
R <sup>2</sup>	0.092	0.108	0.106	0.108	0.151	0.153	0.080
N	9,407.000	7,123.000	7,055.000	7,029.000	6,969.000	6,568.000	6,593.000

Source: Author's calculations.

Note: The table contains standardized beta coefficients. t statistics in parentheses.

The dependent variable is binary and takes a value of 1 if the respondent intends to move abroad within the next 12 months. The addition "PCA"/"PPCA" in a variable name indicates that the variable is taken from a (polychoric) principal component analysis.

All specifications contain a constant. Specifications (1) to (6) include country fixed effects, specification (7) includes PSU fixed effects. Specifications (4) to (6) include three principal components representing regional economic development.

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

The country-specific estimates point toward differences in the average effects between EU and non-EU CESEE countries, with Romania and Bulgaria being notable exceptions. When we interact the dissatisfaction variable with an EU dummy (in the pooled sample), we see this confirmed: The relationship between dissatisfaction with public services and migration intentions is statistically significantly lower in EU CESEE countries.

Distinguishing by the six different types of public services, the estimates plotted in chart 6 show that dissatisfaction with the public social security system, health services, services related to economic development and the public infrastructure are associated with statistically significant increases in migration intentions. Here, the variables capturing dissatisfaction with each service are dummy variables, hence we refrain from portraying standardized coefficients and show the unstandardized coefficient estimates instead. Dissatisfaction with a public service type is associated with a 1.2 to 1.6 percentage point increase in migration intentions. Dissatisfaction with education and defense and safety does not show up as significant.

We further investigate heterogeneous effects with respect to individuals' exposure to public services.<sup>11</sup> More specifically, we interact respondent-specific characteristics that indicate that a respondent may be particularly exposed to an individual service with a dummy that indicates dissatisfaction with this service. We find that having children under the age of 6 leads to a significant effect of dissatisfaction with education services and increases the effect of dissatisfaction with health and defense and public safety. Furthermore, among the self-employed, the impact of dissatisfaction with public services related to economic development is higher than among non-self-employed. We also interact dissatisfaction with social security with having small children, being unemployed or retired, but do not find statistically significant interactions.

<sup>11</sup> The regression outputs are not displayed in this paper due to space limitations, but they are available upon request.

Chart 5

### OLS: coefficients by country

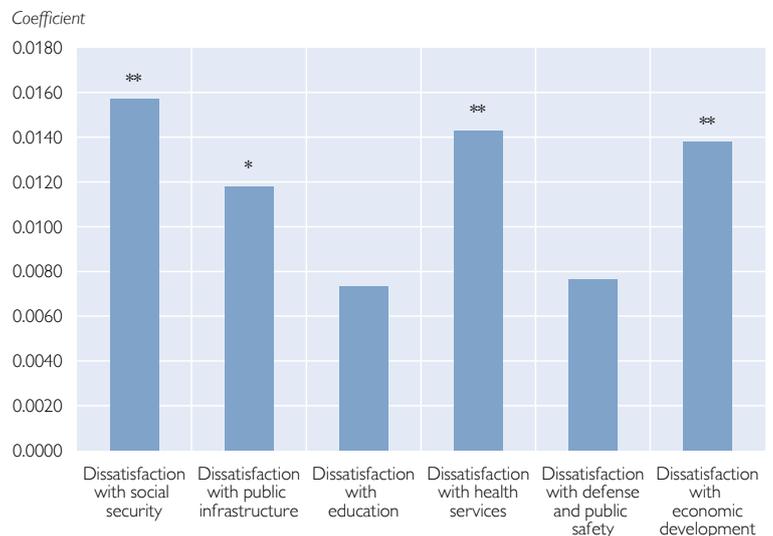


Source: Author's calculations based on OeNB Euro Survey data (2018).

Note: Country-specific coefficients are based on interactions of the dissatisfaction index with country dummies with the specification (6) in table 1. The horizontal line indicates coefficient estimates in the pooled sample (0.007). \*, \*\* and \*\*\* indicate a 10%, 5% and 1% level of significance, respectively.

Chart 6

### OLS estimates: distinguishing by type of service



Source: Author's estimations based on OeNB Euro Survey data (2018).

Note: All specifications include a full set of covariates and country fixed effects. \*, \*\* and \*\*\* indicate a 10%, 5% and 1% level of significance, respectively.

### 4.3 IV estimation

In order to consider possible endogeneity issues that can cause biases in OLS estimates, we perform instrumental variable (IV) estimations using different IVs. Table 2 shows the results and indicates the IVs used in the bottom panel (the corresponding first-stage results are displayed in table D1 in annex D).

The results remain positive and statistically significant after instrumentation, and the coefficients increase in magnitude. When only externally merged geo-referenced data are used as IVs (road density and urban fabric), the IVs are weak, as indicated by low Kleibergen-Paap statistics. The high coefficient estimates in columns (2) and (3) should thus be disregarded due to weak instruments. The first-stage results, displayed in table D1 in the annex, confirm that urban fabric has no significant impact on the perceived quality of public services, and also the PCAs based on different road types are only weakly associated with the rating of public services quality. The first-stage F statistic improves considerably, however, when the variable measuring the respondents' view of the adequacy of public spending on public services is added as instrument. The first-stage results show that respondents who think that state spending on public services should be maintained at the current level (as opposed to increased) exhibit a lower degree of dissatisfaction with public services. This confirms that the opinion on the adequacy of state spending can be related to the perceived quality of public services. Columns (4) to (5) display the results for different combinations of IVs, all including the adequacy of state spending as instrumental variables, and indicate that coefficients are considerably larger than when estimated with OLS. When we standardize the coefficients in (4) to (6), they average at approximately 0.1 and are thus twice as high as the OLS standardized coefficients. A 1 standard deviation increase in dissatisfaction with public services thus increases migration intentions by approximately 3 percentage points.

While contentment with public services is not the most important factor for explaining migration intentions, with sociodemographic factors, unemployment and networks explaining a large share of the variation in the data, it is certainly an important nonpecuniary factor that robustly relates to individuals' aspirations to emigrate.

Table 2

#### IV estimations

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	IV	IV	IV	IV
PPCA: dissatisfaction with public services	0.00755*** (3.80)	0.124** (2.48)	0.0925** (2.11)	0.0145*** (2.71)	0.0161*** (3.00)	0.0160*** (2.98)
Observations	6,615	6,604	6,604	6,615	6,604	6,604
Kleibergen-Paap F		4.400	3.173	27.33	24.11	22.50
Hanson-J		1.633	7.073	24.25	31.58	36.34
Hanson-J p		0.652	0.215	0.390	0.248	0.164
<b>Instrumental variables</b>						
PCA road density (4 components)		Yes	Yes	No	Yes	Yes
PCA urban fabric (2 components)		No	Yes	No	No	Yes
State spending inadequate		No	No	Yes	Yes	Yes

Source: Author's calculation.

Note: All specifications include a list of covariates and a full set of country dummies. t statistics in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 5 Conclusions

Data from a recent wave of the OeNB Euro Survey suggest that across CESEE, between 3% and 20% of individuals aged between 25 and 64 intend to leave their home countries within the next 12 months. The population-weighted CESEE average, which takes into account the considerable differences in country size, indicates that around 6% of individuals in the region intend to emigrate. Average migration intentions in the pooled sample, which represents an “average CESEE country,” amount to 9%. Across the ten countries in the sample, average migration intentions vary considerably and are highest in North Macedonia (20%) and lowest in Czechia (less than 3%). Descriptively, the data confirm that young people and men have stronger migration intentions.

Ongoing emigration from CESEE, especially of young people, adds to population aging, declining labor forces and increasing dependency ratios, and poses further demographic challenges to the countries in the region. Many factors that have been identified as relevant drivers of migration intentions are difficult to directly address by policymakers, such as sociodemographic factors or networks abroad. For this reason, we think it is particularly important to study contributing factors that can be tackled by policymakers. Therefore, we focus on individuals’ contentment with public services in their home countries, studying its relationship to migration intentions. Descriptively, we see that migration intentions are stronger among respondents who are dissatisfied and weaker among those who are not dissatisfied with the quality of public services. This finding is confirmed in an OLS framework, where we control for sociodemographic and economic factors, proxies for wealth holdings, economic development in the home region, network effects and trust in local and EU institutions. Respondents who are more dissatisfied with public services are more likely to have the intention to move abroad. This effect holds for our index of dissatisfaction that combines the responses of the six public services categories distinguished in the survey: social security, public infrastructure, education, health, defense and public safety, and economic development. Apart from education and public safety, the relationship is also significant when we distinguish between public services categories. We allow the effects of dissatisfaction with public services to differ across countries and find that in many countries, the effect is similar to the average effect in the sample. A notable exception is Albania, where the coefficient estimate is more than twice as high as in Romania and Serbia, the two countries that rank second and third in terms of effect size. Robustness checks confirm, however, that the overall effect is not driven by Albania, or another single country in the sample. Instrumental variable estimations, which we carry out to address possible endogeneity issues, reassure the OLS findings: The relationship between dissatisfaction with public services and migration intentions is positive and statistically significant. The IV estimates indicate a higher coefficient estimate than the OLS framework.

The link between people’s contentment with public services quality and migration bears the risk of a vicious cycle: With more individuals emigrating, public finances can get under increasing pressure, which leaves less room for improving the quality of public services or may even lead to a further deterioration. This, in turn, may further add to emigration pressures. At the same time, there is also the chance of creating a virtuous cycle: Appropriate policies would lead to a strengthening of public services in CESEE countries. Sound social security systems, high quality

education and health care, good infrastructure, safe living conditions and publicly supported regional economic development initiatives would provide for an environment that may reduce individuals' aspirations to move abroad, thereby strengthening public finances and creating space for public service improvements that further incentivizes people to stay. At the same time, these developments can have a positive impact on return migration and/or immigration to CESEE. Public services quality is certainly not the only factor that influences migration intentions, but it is a relevant one and, importantly, one that policymakers have the power to change.

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## Annex A: Migration intentions by gender, education and by country

Table A1

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

	Gender			Difference Men vs. women	Education			Difference High vs. low + medium
	All	Men	Women		Low	Medium	High	
	%							
Czechia	2.7	3.3	2.0		10.9	2.0	4.8	
Poland	3.7	5.8	1.9	**	1.9	2.9	7.6	*
Hungary	4.3	3.6	5.0		3.3	3.9	6.0	
<b>CESEE average (population-weighted)<sup>1</sup></b>	<b>6.0</b>	<b>7.5</b>	<b>4.7</b>	<b>***</b>	<b>4.8</b>	<b>5.8</b>	<b>7.8</b>	<b>**</b>
Croatia	6.8	8.3	5.5		2.1	6.3	9.5	
Romania	6.9	7.6	6.3		0.0	7.7	4.4	
Bulgaria	7.5	8.1	7.0		14.9	6.7	7.7	
<b>Average over 10 countries<sup>2</sup></b>	<b>9.1</b>	<b>11.0</b>	<b>7.3</b>	<b>***</b>	<b>9.4</b>	<b>8.8</b>	<b>9.8</b>	
Serbia	11.1	13.9	8.4	**	7.8	9.4	18.7	***
Bosnia and Herzegovina	12.9	16.7	8.8	***	5.2	16.4	10.8	
Albania	14.2	17.1	11.7	**	17.7	15.1	12.4	
North Macedonia	20.0	24.2	16.0	**	20.6	22.0	13.3	**

Source: Author's calculations based on OeNB Euro Survey data (2018).

Notes: Survey weights applied. The columns labeled "Difference" indicate whether the mean is statistically different between two subgroups. Statistical significance is based on t-tests from robust OLS estimations of migration intentions on gender and education dummies, respectively. \*, \*\* and \*\*\* indicate a 10%, 5% and 1% level of significance, respectively.

<sup>1</sup> Survey-weighted country averages are weighted by the population aged 25 to 64 of each country.

<sup>2</sup> Simple average over survey-weighted averages of the ten countries.

## Annex B: Variables used in the OLS and IV estimations

Table B1

### List of variables used in OLS and IV 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>Quality of public services</b>	
PPCA: dissatisfaction with public services	Principal component that represents low satisfaction with the six categories of public services; the PCA is based on the six original variables asking about satisfaction with public services (Likert-type scale of answers).
Dissatisfaction with...	Dummy variable that takes a value of 1 if respondent is (very) dissatisfied with...
... social security	... social security (unemployment compensation, public pension, benefits for families and children)
... public infrastructure	... public infrastructure (e.g. public road and town construction, railway network, public transport)
... education services	... education (e.g. public kindergartens, schools, universities)
... health services	... health (e.g. public hospitals)
... defense and public safety	... defense and public safety (e.g. police, justice system)
... economic development	... economic development (e.g. support for small and medium-sized companies, investment allowances, financial support for disadvantaged regions)
<b>Sociodemographic factors</b>	
Age, age squared	Age of respondent and its square
Medium education	Dummy variable that takes a value of 1 if respondent has medium education (i.e. lower and upper secondary, post-secondary but non-tertiary)
High education	Dummy variable that takes a value of 1 if respondent has high education (i.e. first and second stage of tertiary)
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. married individuals from large households, with small children
Log(size of town)	Logarithm of the size of the residence town
<b>Individual economic factors</b>	
Log(equiv. household income) [sq.]	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 over and 0.3 for each child under the age of 13. (It is more common to use the age of 14 as a cutoff between a weight of 0.5 and 0.3, but this is not possible in our data, and we use 13 instead.) Non-response in the income variable enters as missing values.
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, including car ownership)
<b>Regional development</b>	
PPCA: prosperous region	Principal component that represents individuals living in regions with low unemployment, moderate income, high activity and low growth in activity (prosperous, stable region) Regional income/unemployment is calculated as the (survey-weighted) average of equivalized household income/individual unemployment using survey weights. Economic activity is measured as the logarithm of night light intensity in 2015, 2016, 2018 (data source: Earth Observation Group, Visible and Infrared Imaging Suite, VIIRS). Growth in activity is measured as the log-difference in night light intensity between 2005 and 2013 (data source: Earth Observation Group, Defense Meteorological Satellite Program – Operational Linescan System, DMPS-OLS). All variables are calculated at different levels of regional aggregation: For night light data, we use the 10km and 20km radius around respondents’ residences 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’s residence, the regions are defined based on NUTS 2 classifications – or finer in some countries (HR, BG, MK).
PPCA: depressed region	Principal component that represents individuals living in regions with high unemployment, low income, moderate activity and moderate growth in activity
PPCA: developing region	Principal component that represents individuals living in regions with moderate unemployment, high income, low activity but high growth in activity

Source: Author’s compilation.

Note: Unless otherwise noted, the source of all variables is the OeNB Euro Survey carried out in fall 2018.

Table B1 continued

### List of variables used in OLS and IV estimations

Variable	Description
<b>Network effects</b>	
PPCA: direct networks	Principal component that represents individuals with direct networks abroad. PPCA contains a dummy variable that takes a value of 1 if respondent and/or their partner receives remittances from abroad and a dummy variable that indicates close family living abroad.
PCA: indirect networks	Principal component that represents individuals with indirect networks abroad. PCA contains the share of remittance receivers in the PSU and in the region and the share of respondents in the PSU and in the region that has family living abroad.
<b>Trust in institutions</b>	
PCA: 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)
PCA: trust in the EU	Principal component that represents trust in the EU (The PCA is performed based on trust in the government/cabinet of ministers, the police, domestically owned banks, the national central bank, foreign owned banks, and the EU.)
<b>INSTRUMENTAL VARIABLES</b>	
PCA road density (4 comp.)	The first four components of a PCA on the following indicators of road density: The density (m/km <sup>2</sup> ) of five types of roads (highways, primary, secondary, tertiary and local roads) based on 8km/8km raster data as well as based on vector data calculated for 5km/10km/20km radii around the place of residence (data source: Global Road Inventory Project (GRIP) dataset, Meijer et al., 2018).
PCA urban fabric (2 comp.)	The first two components of a PCA on the following indicators of urban fabric: CORINE continuous and discontinuous urban fabric in 500m/1km/2km/5km/10km/20km radii around the place of residence (data source: CORINE landcover data).
PPCA: inadequate state spending on public services	Principal component that represents individuals that consider state spending on the six types of public services as inadequate. The six original variables enter the PPCA.

Source: Author's compilation.

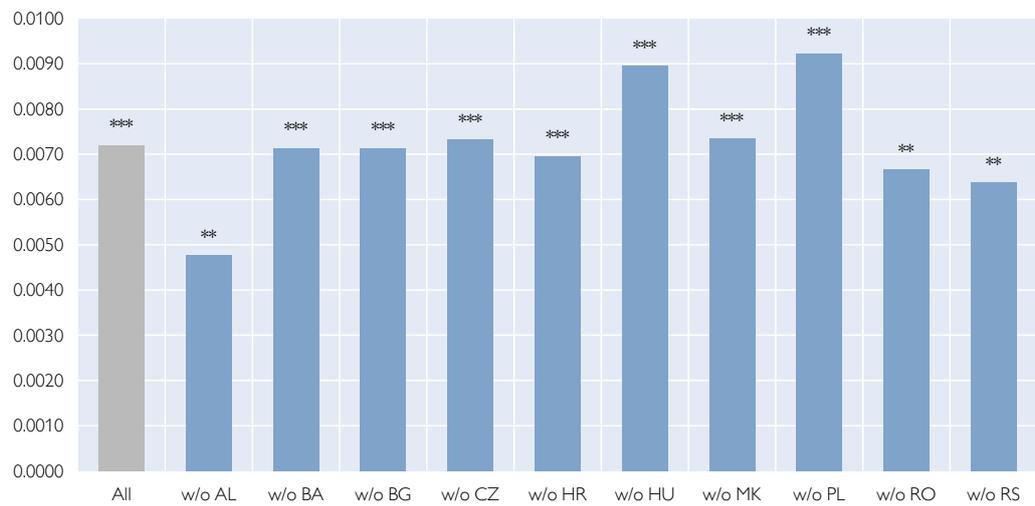
Note: Unless otherwise noted, the source of all variables is the OeNB Euro Survey carried out in fall 2018.

## Annex C: Robustness

Chart C1

### Robustness of coefficient estimate to omission of countries

Coefficient estimate of dissatisfaction index



Source: Author's calculations based on OeNB Euro Survey data (2018).

## Annex D: First-stage results of IV estimations

Table D1

### IV estimations – first-stage results corresponding to columns (2) to (6) in table 2

	(2)	(3)	(4)	(5)	(6)
	1 <sup>st</sup> stage IV				
PCA: high road density	-0.0164 (-0.87)	-0.0200 (-0.89)		0.00433 (0.24)	-0.00350 (-0.16)
PCA: highways	-0.0344** (-2.41)	-0.0357** (-2.49)		-0.0192 (-1.45)	-0.0201 (-1.51)
PCA: primary roads	0.0419** (2.46)	0.0425** (2.49)		0.0393** (2.43)	0.0399** (2.46)
PCA: few medium roads	-0.0171 (-0.85)	-0.0206 (-1.00)		-0.0312 (-1.64)	-0.0314 (-1.60)
PCA: high urban fabric		-0.0167 (-0.57)			0.00225 (0.08)
PCA: high urban fabric close to home		-0.0209 (-0.69)			-0.0237 (-0.83)
State spending on social security					
Maintained			-0.242*** (-4.83)	-0.243*** (-4.82)	-0.243*** (-4.83)
Lowered			0.218*** (2.62)	0.216*** (2.58)	0.214** (2.55)
Do not know			0.234* (1.87)	0.226* (1.81)	0.224* (1.79)
No answer			0.0810 (0.12)	0.0856 (0.13)	0.0796 (0.12)
State spending on public infrastructure					
Maintained			-0.309*** (-6.41)	-0.310*** (-6.41)	-0.309*** (-6.39)
Lowered			0.0559 (0.78)	0.0601 (0.84)	0.0616 (0.86)
Do not know			0.236 (1.56)	0.242 (1.60)	0.244 (1.61)
No answer			1.766** (2.46)	1.770** (2.45)	1.762** (2.42)
State spending on education					
Maintained			-0.306*** (-5.99)	-0.300*** (-5.82)	-0.299*** (-5.80)
Lowered			0.0280 (0.27)	0.0270 (0.26)	0.0266 (0.26)
Do not know			0.268* (1.85)	0.277* (1.90)	0.277* (1.90)
No answer			1.110*** (2.85)	1.121*** (2.85)	1.125*** (2.88)
State spending on health					

Source: Author's calculations.

Note: t statistics in parentheses.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Adequacy of the state spending on the different public services: All answer categories are included in the estimations, with the response "state spending should be increased" being the reference category.

First-stage estimations also include all control variables of the second stage, but they are omitted from this table.

Table D1 continued

**IV estimations – first-stage results corresponding to columns (2) to (6) in table 2**

	(2)	(3)	(4)	(5)	(6)
	1 <sup>st</sup> stage IV				
Maintained			-0.303*** (-5.17)	-0.304*** (-5.16)	-0.304*** (-5.15)
Lowered			0.130 (1.32)	0.122 (1.24)	0.124 (1.25)
Do not know			0.416** (2.26)	0.414** (2.25)	0.415** (2.25)
No answer			0.404 (0.56)	0.389 (0.53)	0.399 (0.55)
State spending on defense					
Maintained			-0.0630 (-1.30)	-0.0645 (-1.33)	-0.0645 (-1.33)
Lowered			0.135** (2.10)	0.134** (2.07)	0.135** (2.08)
Do not know			0.555*** (4.83)	0.543*** (4.74)	0.543*** (4.73)
No answer			-0.248 (-0.75)	-0.278 (-0.86)	-0.272 (-0.85)
State spending on economic devel.					
Maintained			-0.0269 (-0.54)	-0.0293 (-0.59)	-0.0285 (-0.57)
Lowered			0.156* (1.80)	0.150* (1.72)	0.152* (1.74)
Do not know			0.591*** (6.07)	0.590*** (6.08)	0.590*** (6.08)
No answer			0.403 (1.53)	0.435* (1.65)	0.432 (1.64)
Observations	6,604	6,604	6,615	6,604	6,604

Source: Author's calculations.

Note: t statistics in parentheses .

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Adequacy of the state spending on the different public services: All answer categories are included in the estimations, with the response "state spending should be increased" being the reference category.

First-stage estimations also include all control variables of the second stage, but they are omitted from this table.