The relevance of remittance inflows to CESEE countries: evidence from macro- and micro-level data

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In this study, a combined analysis of micro- and macro-level data on remittances is used to shed light on the relevance of such transfers in Central, Eastern and Southeastern European (CESEE) countries. In the early and mid-1990s, and more recently in the context of EU accession, CESEE countries experienced considerable out-migration, and remittances have become an important source of foreign exchange in these countries. Against this background, this study examines the relevance and nature of remittance inflows to CESEE. To this end, both the dispersion of remittances across individuals in a country (based on microdata from the OeNB Euro Survey) and the average amount received per recipient (estimated by combining micro- with macrodata) are assessed. By relating these two dimensions of remittances descriptively, we examine differences across countries and changes over time.

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Growth of global remittances, which used to be historically high year on year, has decreased recently, with the World Bank (2016) expecting a stabilization at low but positive rates. Despite this overall slowdown, in some countries, remittances still account for a considerable share of GDP. In particular, remittances to low- and middle-income countries are more than twice as high as official development assistance and aid. They amounted to two-thirds of FDI inflows in 2015 and constitute a stable, typically countercyclical, source of income. Given this countercyclicality, which is not inherent in most other private capital flows, remittances enhance the receiving households' resilience to idiosyncratic or macroeconomic shocks or crises in general, thus contributing to poverty reduction (see e.g. OECD, 2014; Adams and Page, 2005). In addition, remittances promote local development by supporting small businesses and small-scale agriculture (Grabel, 2008), i.e. entities that usually do not benefit from FDI inflows. Not only the overall size, but also this distinctive feature that sets remittances apart from other capital flows calls for a thorough assessment.

In a worldwide comparison, small island states as well as Central, Southern and Eastern Asian countries and the Caribbean are prominent recipients of remittances. In Central, Eastern and Southeastern European (CESEE) countries[2], remittances likewise make substantial, above-average contributions to the respective GDP. In the early and mid-1990s, and more recently in the context of EU accession, CESEE countries experienced significant out-migration. In 1992, net migration[3] was negative in all selected CESEE countries apart from the Czech

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[2] *This study focuses on the following CESEE countries: 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). These ten countries are covered in the OeNB Euro Survey, which provides the micro-level data used in this study.*

[3] *Net migration refers to the difference between immigration flows to and emigration flows from a country. Data on net migration stem from the World Bank's World Development Indicators; they are updated at five-year intervals.*

Republic, Hungary and Serbia, and, in 1997, net migration turned negative also in Serbia. Currently, the stock of migrants from Albania and Bosnia and Herzegovina amounts to approximately 40% of the respective home country population. The number of emigrants from the former Yugoslav Republic of (FYR) Macedonia and Croatia came to approximately 25% and 20% of the respective country's population in 2015. The countries with the lowest emigration rates among the CESEE countries covered here are Hungary (6%), the Czech Republic (9%) and Poland (12%), which are still well above the global average of 3%. These high emigration rates explain the large inflows of remittances to CESEE countries, where, in 2015, remittances even exceeded FDI inflows. Against the background of the growing importance of remittances relative to other inflows and the comparatively scarce literature on the topic, this study zeroes in on remittances in the CESEE region.

The aim of this study is to shed light on the relevance of remittance inflows to selected CESEE economies by combining country-level and individual-level data sources. While the former provide information about the aggregate amount of remittances that flows into a given country, the latter are used to determine the number of recipients of remittances within that country, as well as to identify, for instance, recipients' socio-economic characteristics. Combining macro- and micro-level data allows approximating the average amount of remittances received per recipient in a given country – a measure that cannot be calculated based on either of the two data sources alone. The number of individuals receiving remittances can be referred to as the extensive margin of remittances, whereas the average amount of remittances received per recipient can be referred to as the intensive margin of remittances. The intensive margin is of particular interest, as it contains information about the distribution of remittances across the population. Contrary to remittances per capita, a measure that assumes an equal distribution of remittances across the population, the intensive margin of remittances shows the average amount per recipient, which allows a more detailed analysis of the implications for household finances, the distribution of disposable income and household vulnerability.

This study is organized as follows. Section 1 focuses on the macro-level evidence and compares global developments and trends in remittance flows to those observed for CESEE countries. In section 2, microdata from the OeNB Euro Survey are used to assess the share of remittance-receiving households as well as recipients' socio-economic characteristics. In section 3, macro- and micro-level evidence is combined and countries are characterized by the spread of remittance recipients and the size of the average amount a typical recipient receives. Section 4 provides a summary.

1 Macroevidence of remittance inflows to CESEE countries

1.1 Global developments

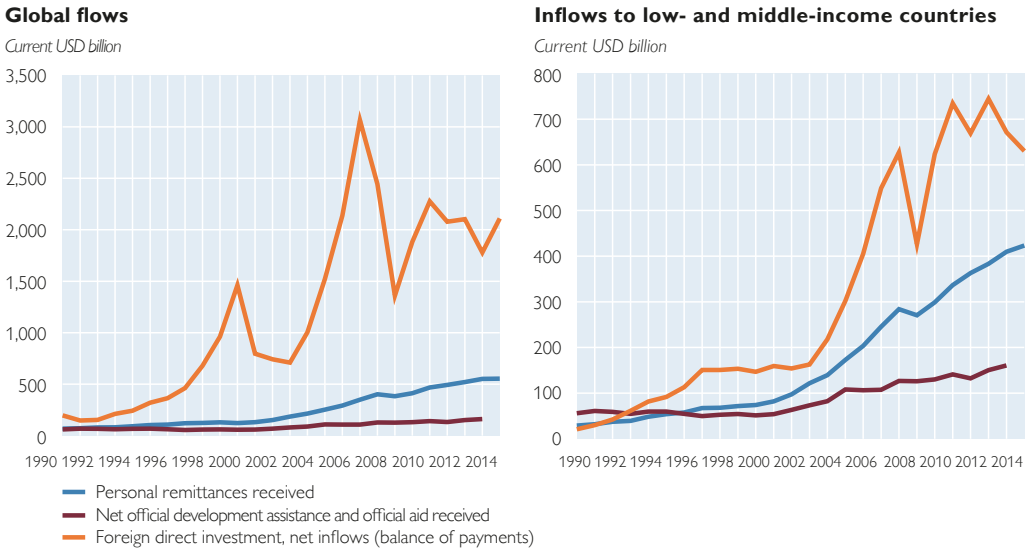
The growth of worldwide remittances[4], which picked up in the early and mid-2000s and averaged well above 10% during the late 1990s and in 2008, experienced a slowdown following the onset of the financial crisis. The overall volume of

[4] *The growth rates are based on data on personal remittances received, measured in current U.S. dollars, as published by the World Bank (World Development Indicators). For a thorough assessment of the role of remittances in the balance of payment statistics, see IMF (2009), IMF (2009a) and Reinke (2007).*

remittances declined in 2009, but the growth rates recovered to an average of 7.7% between 2010 and 2014. While the growth rate of global remittances was close to zero again in 2015, the World Bank predicted an increase of 0.8% for 2016, and expects growth in remittances to level off at historically low, yet positive yearly rates of between 3% and 4%.[5] This development is partly due to moderate economic growth in the main remittance-sending countries, but also to low oil prices reducing remittances from oil-producing countries (mainly Russia; to a lower extent also Gulf Cooperation Council (GCC) countries). The appreciation of the U.S. dollar against currencies of other core remittance-sending countries (mainly the euro and the Russian ruble) has further dampened growth of USD-denominated remittances in recent years (World Bank, 2016a). Despite the recent slowdown in overall remittance growth, remittances to low- and middle-income countries[6], which are directly channeled to households, are more than twice as high as official development assistance and aid flows (chart 1).

Chart 1

Remittances, net official development assistance and aid (ODA) and foreign direct investment (FDI)



Source: World Development Indicators (World Bank).

Furthermore, in low- and middle-income countries, remittances amount to half the size of FDI inflows and they are more stable than private capital flows, which have repeatedly been shown to be highly cyclical with respect to the eco-

[5] *These data are based on the Annual Remittances Data and on the Bilateral Remittances Matrices (as at October 2016), which are analytically estimated datasets published by the World Bank.*

[6] *Low-income economies are defined as countries with a gross national income (GNI) per capita of USD 1,025 or less in 2015, as calculated using the World Bank Atlas method. Lower-middle-income economies are countries with a GNI per capita between USD 1,026 and USD 4,035, and upper-middle-income economies are countries with a GNI per capita between USD 4,036 and USD 12,475. High-income economies are countries with a GNI per capita of USD 12,476 or higher. All the non-EU CESEE countries covered here (Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia) as well as Bulgaria and Romania belong to the group of upper-middle-income countries, while Croatia, the Czech Republic, Hungary and Poland fall into the group of high-income countries.*

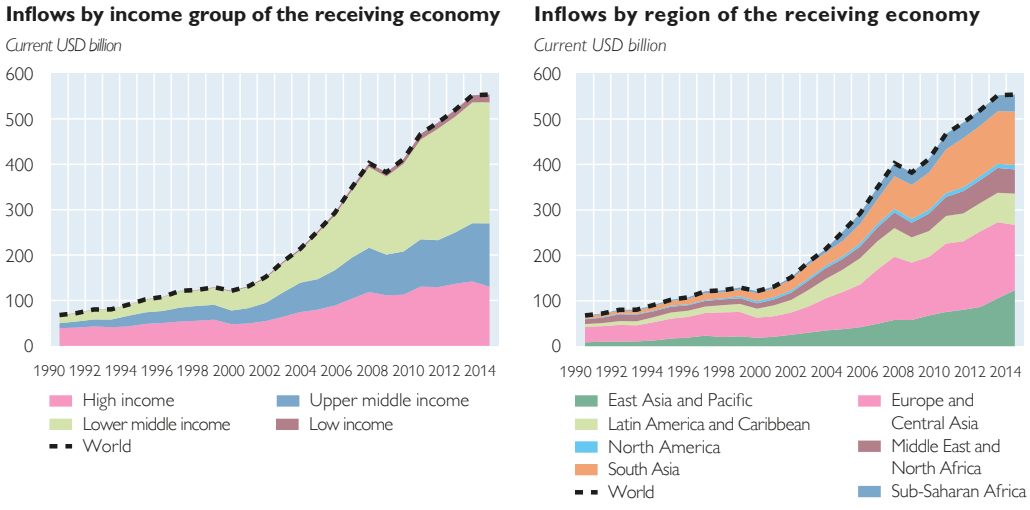
nomic performance of the receiving economy. Private capital flows tend to soar during booms, and decrease sharply during recessions (see Kaminsky et al., 2004).[7]

Remittances, in contrast, are less volatile and tend to be countercyclical with respect to the receiving countries' economic performance and procyclical with respect to the remittance-sending country (see chart 1 and Frankel, 2011; Bettin et al., 2014). This countercyclicality of remittances can help smooth households' consumption patterns in the event of adverse shocks – in particular if remittances are intended for consumption. Migrants in fact tend to increase remittances amid weak economic conditions in the receiving economies and if the recipients are faced with wage decreases or unemployment, crop failures or similar hardships. But even remittances sent for investment purposes do not exhibit the high volatility and procyclicality observed for other capital flows. Migrants continue investing in their home countries in difficult times whereas foreign investors withdraw capital – a phenomenon that is similar to the home bias of investment (Ratha, 2005).

The vast majority of global remittances – roughly 75% or more than USD 420 billion in 2015 – are directed toward low- and middle-income countries (chart 2, left panel). Low-income countries receive less than one-twentieth of the amount channeled to middle-income countries and less than one-seventh of the amount sent to high-income countries. In per capita terms, remittances average some USD 30 in low-income countries, USD 73 in middle-income countries and more than USD 100 in high-income countries (as at 2015).[8]

Chart 2

Remittances inflows by receiving economies



Source: World Development Indicators (World Bank).

[7] *Araujo et al. (2017) highlight, inter alia, that private capital flows to emerging markets are more procyclical and less persistent than flows to low-income countries, thereby confirming Kaminsky et al. (2004), who show that procyclicality is particularly strong for middle- and high-income countries.*

[8] *Remittances per capita should not be confused with remittances per recipient. While the former may be computed easily by dividing overall remittance inflows by total population, the latter results from dividing overall inflows by the number of actual recipients of remittances. Remittances per recipient must be estimated based on micro-level data (see section 2.1).*

Although remittances are often seen as monetary flows that redistribute income from high- to low-income countries, low-income countries appear to gain less from this redistribution in per capita terms than middle-income countries. When normalizing remittance inflows with the receiving countries' GDP levels, this picture is reversed. Between 2009 and 2015, average remittances amounted to 4.6% of GDP in low-income countries, yet only came to 3.7% of GDP in middle-income countries, and to 1.5% of GDP in high-income countries.[9] In terms of shares in GDP, low-income countries also make up the core remittance-sending group of countries, as surprising as this may seem at first. However, in light of dynamic South-South migration (World Bank, 2016; Ratha and Shaw, 2007), i.e. migration from one developing country to another, such a finding is no longer astonishing. A geographical breakdown of remittance-receiving countries (chart 2, right panel) reveals that, recently, the majority of remittances have been directed to Europe and Central Asia, South Asia as well as East Asia and the Pacific. The core remittance-sending regions are high-income countries in Europe and Central Asia, the Middle East and North Africa, and also North America (see chart A1 in the annex). Approximately 42% of worldwide remittances in 2015 originated in Europe and Central Asia (63% thereof in the European Union and 50% thereof in the euro area, respectively), 22% in the Middle East and North Africa, 19% in North America and 14% in East Asia and the Pacific. The remaining world regions combined – Latin America and the Caribbean, South Asia and Sub-Saharan Africa – sent less than 4% of global remittances. On the country level, the United States was the most important remittance-sending country (16% of overall remittances in 2015), followed by Saudi Arabia (10%), Switzerland (6%), China (5%) and Russia (5%). Among European Union countries, Germany (5% of overall remittances in 2015), France, Luxembourg and the United Kingdom (3% each) exhibited the highest outflows of remittances.

1.2 Trends in CESEE countries

While the development of remittance inflows to CESEE countries has in general broadly followed the patterns observed at the global level, both the increase between 1998 and 2004 and the decline during the crisis were considerably more pronounced, and so was the subsequent recovery. The average growth rate of remittances to CESEE countries was negative during the period from 2009 to 2012, but increased considerably between 2013 and 2015, namely to almost 5.7% (see table 1). The two panels of chart 3 highlight the role of remittances compared with official development assistance and aid (ODA, left panel) and the contribution of each country to total remittance inflows to the region (right panel) in CESEE countries.

Table 1

Average growth rates of remittance inflows

	World	Low and middle income	CESEE
	Annual growth rates in %		
1998–2004	8.84	11.26	35.47
2005–2008	17.16	19.52	19.66
2009–2012	5.36	6.55	–4.49
2013–2015	4.04	5.28	5.67

Source: World Development Indicators (World Bank), author's calculations.

Note: According to the World Bank's classification of income groups (December 2016), the Czech Republic, Croatia, Hungary and Poland belong to the group of high-income countries, and Albania, Bosnia and Herzegovina, Bulgaria, FYR Macedonia, Romania and Serbia belong to the group of (upper) middle-income countries.

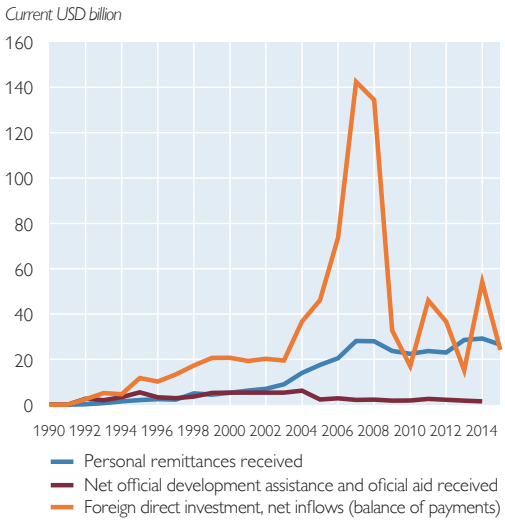
[9] *The shares in GDP are calculated based on data published by the World Bank (World Development Indicators) and represent unweighted averages of the country groups.*

Until the early 2000s, ODA and remittance inflows to CESEE countries were of a similar magnitude, but the rise in remittances was accompanied by decreases in aggregate ODA. Currently, ODA amounts to merely 5% of remittances. FDI inflows to the CESEE region were higher than other inflows already in the mid-1990s, and they soared in the mid-2000s, before contracting drastically right after the onset of the crisis. Since then, FDI inflows have been highly volatile, whereas remittances have remained comparatively stable. During the crisis, remittances to CESEE decreased, mainly due to poor economic performance in migrants' host countries, picked up again after 2012, before declining again in 2015. The drop in FDI inflows was even more pronounced, however, and as a consequence, remittances exceeded FDI inflows by about USD 2 billion in 2015.

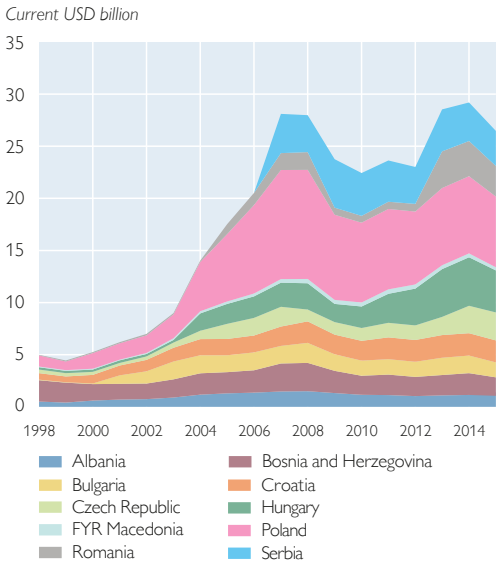
Chart 3

Inflows to CESEE

Inflows of remittances, ODA and FDI to CESEE



Inflows of remittances to CESEE, by recipient economy



Source: World Development Indicators (World Bank).

The countercyclicality of remittances with respect to the economic performance of the receiving countries has been repeatedly shown in the literature – in particular for the group of middle-income countries, which includes most of the CESEE countries.[10] The decreases in remittances at the onset of the crisis and in recent years should be associated with weak economic conditions in migrants' destination countries (procyclicality with respect to the performance of the remittance-sending countries) rather than with weak development in the recipient countries.

As is evident from a geographical decomposition of total remittance inflows to CESEE countries (right panel of chart 3), Poland receives roughly one-quarter of total remittances to the region, followed by Hungary (15%), Serbia (13%) and Romania (11%). When we take the size of the countries into account and stan-

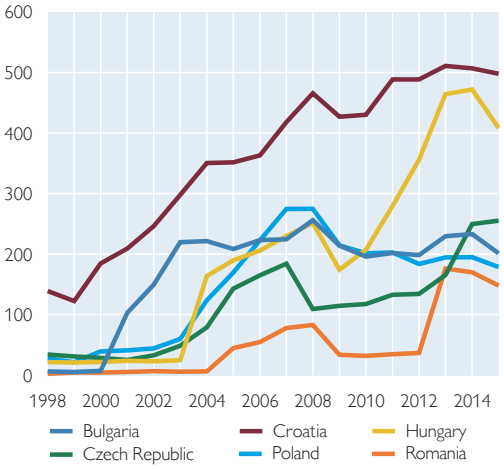
[10] *See for example Kaminsky et al. (2004) or Araujo et al. (2017).*

Chart 4

Inflows of remittances to CESEE: per capita

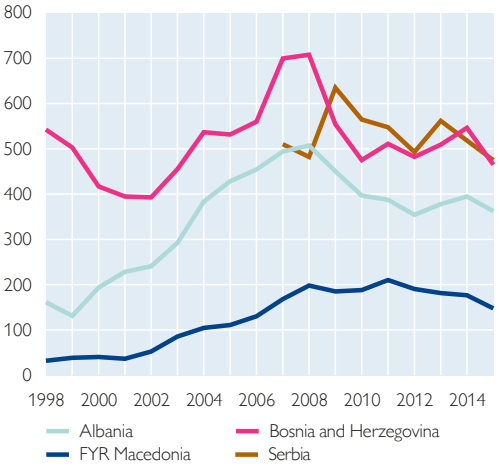
Remittances per capita, EU CESEE countries

Current USD



Remittances per capita, non-EU CESEE countries

Current USD



Source: World Development Indicators (World Bank).

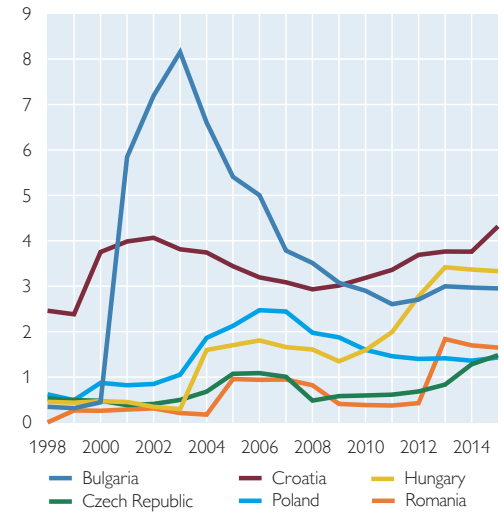
dardize total remittances by population (chart 4), in per capita terms, Bosnia and Herzegovina, Serbia, Croatia, Albania and recently also Hungary are the top remittance recipients of the region. Per capita remittances in these countries are roughly twice as high as those directed toward Poland, which – at less than USD 180 in 2015 – receives particularly little in per capita terms. Similarly, the lowest share of remittances in GDP in 2015 (chart 5) is observed in Poland (1.4%), followed by the Czech Republic (1.5%) and Romania (1.6%). By contrast, the

Chart 5

Inflows of remittances to CESEE: shares in GDP

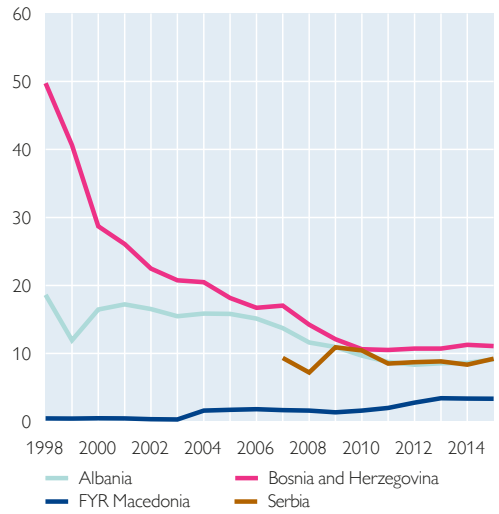
Remittances as shares in GDP, EU CESEE countries

% of GDP



Remittances as shares in GDP, non-EU CESEE countries

% of GDP



Source: World Development Indicators (World Bank).

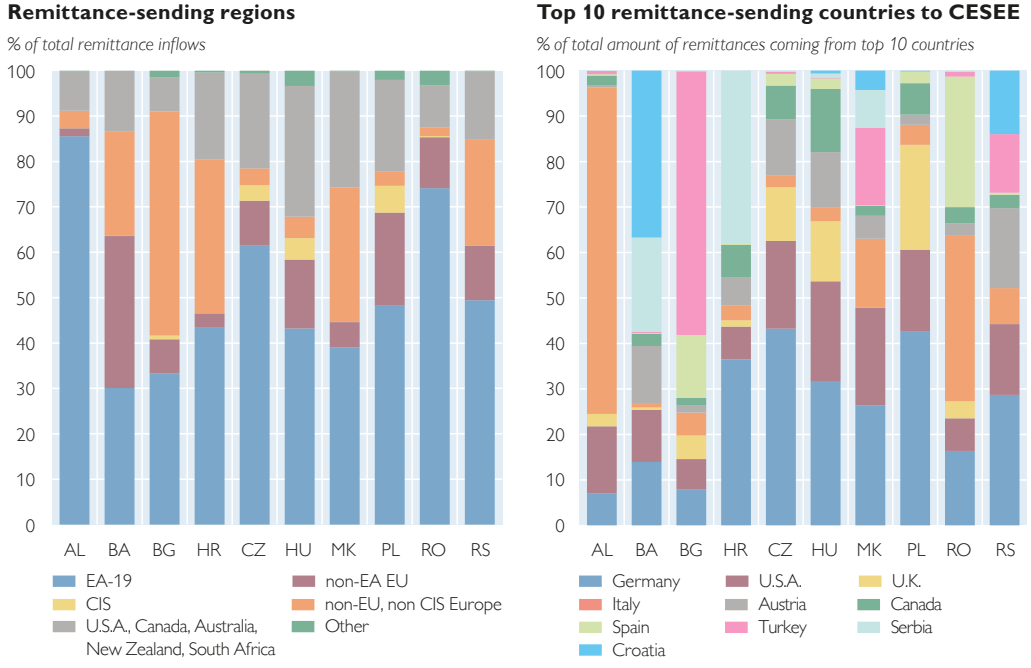
highest shares of GDP were recorded in Bosnia and Herzegovina (11%), Albania and Serbia (9% each).

1.3 The bilateral dimension of remittances to CESEE countries

Chart 6 gives an overview of the main remittance-sending countries with respect to the CESEE region. The underlying World Bank data represent estimates of bilateral remittances based on bilateral migration stock data.[11] The left panel highlights that countries in the euro area (EA-19) are the top remittance-sending countries in most CESEE countries. In Bulgaria, Croatia, FYR Macedonia, but also in Bosnia and Herzegovina and in Serbia, non-EU, non-CIS European countries[12] are major sources of remittances. Bulgaria, for example, receives most remittances from Turkey, which also accounts for a large part of remittances sent to FYR Macedonia. Croatia receives more remittances from Serbia (top sender) than from Germany (runner-up), and Serbia receives the largest shares from Austria and Germany. The right panel of chart 6 presents the top 10 remittance-sending countries to the overall CESEE region (together, these sending countries account for more than 70% of total inflows), showing for each CESEE country a breakdown by these top 10 senders.

Chart 6

Main remittance-sending countries and regions



Source: Bilateral Remittance Matrix 2015 (World Bank, as at October 2016).

[11] *All unilateral macro-level data on remittances used in this paper are taken from the World Bank's World Development Indicators and are based on IMF balance of payments data. Given different compilation methods, there may be discrepancies between the unilateral data on remittances and the estimates of the bilateral flows of remittances used in chart 6.*

[12] *Non-EU, non-CIS European countries are Switzerland, Norway, Bosnia and Herzegovina, Serbia, Kosovo, Albania, FYR Macedonia, Iceland, Turkey, and Lichtenstein.*

2 Microevidence of remittance inflows to CESEE countries

2.1 Descriptive statistics

The micro-level data are based on the OeNB Euro Survey, an individual-level dataset the Oesterreichische Nationalbank (OeNB) started to compile in selected CESEE countries[13] in 2007. In the 2009–2015 waves, respondents were asked whether they received money from abroad;[14] they had the answer choices "No," "Yes, regularly," "Yes, infrequently," "Don't know" and "No answer". (The survey did not ask households to specify amounts.) Based on individual answers, the share of remittance recipients can be estimated as the (survey-weighted) average of positive answers for each year and country.[15]

This descriptive analysis shows that, similar to the macroeconomic level, the survey-based estimates of the shares of remittance recipients in the population differ considerably across CESEE countries (table 2). In Poland, Hungary and the Czech Republic, less than 5% of the population says that they, on average, received remittances between 2009 and 2015, whereas in Bosnia and Herzegovina and FYR Macedonia more than 10% reported remittances, in Albania even 22%. The latter three non-EU CESEE countries are also those with the highest emigration rates in the sample, and the former three countries exhibit the lowest emigration rates among the ten economies under consideration.

Table 2

Extensive margin, emigration rates and remittances per capita

	Remittance recipients (% of population), mean, 2009–2015	Remittance recipients (% of population), standard deviation, 2009–2015	Emigration rates (% of origin-country population) in 2015	Remittance inflows per capita (current USD), mean, 2009–2015
Albania	22.33	3.78	38.87	389.06
FYR Macedonia	10.89	1.53	24.83	182.77
Bosnia and Herzegovina	10.20	1.87	43.32	508.46
Serbia	7.60	1.76	13.59	542.15
Romania	7.22	1.07	17.18	91.10
Croatia	6.69	2.06	20.48	478.56
Bulgaria	5.75	1.79	16.39	209.30
Poland	4.25	1.22	11.71	195.68
Hungary	3.14	1.53	6.05	343.93
Czech Republic	2.95	0.71	8.84	167.00

Source: Author's calculations based on OeNB Euro Survey; UN International Migrant Stock (2015); World Development Indicators.

While the above figures are averages of all survey waves, chart 7 illustrates the development of the survey-based estimates of the shares of remittance recipients over time. In addition to the observable heterogeneity across countries, the shares

[13] *The OeNB Euro Survey is conducted in the ten CESEE countries listed in footnote 2. The group comprises the CESEE EU Member States and the Western Balkan countries that do not use the euro as legal tender.*

[14] *The precise questions were: "Do you personally or your partner receive money from abroad? E.g. from family members living or working abroad, pension payments, etc.?" from 2009 to 2013 and in 2015, and "Did your household receive income (or financial support) from the following sources: Income from abroad (from family members living or working abroad, pension payments, etc.)?" in 2014.*

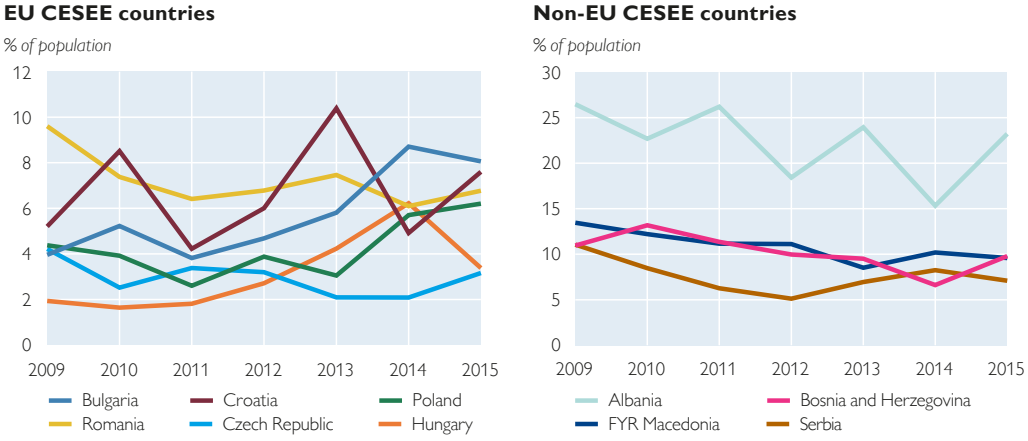
[15] *In particular, the share of remittance recipients is estimated as the (survey-weighted) share of individuals that stated an either regular or infrequent receipt of money from abroad among all individuals who gave valid answers. Those that answered "Don't know" or "No answer" are excluded from the base. The shares are computed for each country and year.*

are particularly volatile in Albania and Croatia, but also in Bulgaria. Charts A2 and A3 in the annex present the same estimated shares of remittance recipients per country but add the corresponding 95% confidence intervals of the estimates (calculated by using survey weights based on the standard error of the estimated mean). The high volatility of the shares of recipients is confirmed by previous microdata-based research. De Sousa et al. (2009) show for Albania, using microdata from the World Bank's Living Standards Measurement Study (LSMS) for the years 2002, 2003 and 2004, that on average 26% of households reported the receipt of remittances during that three-year period. This percentage roughly matches our OeNB Euro Survey estimates.

According to Petreski and Jovanovic (2013), the share of remittance-receiving households in FYR Macedonia stood at 16% in 2008 (which is close to the upper bound of our 95% confidence interval for 2009) and 21% in 2012 (which is considerably above our 95% confidence interval for 2009). In another assessment for FYR Macedonia, Mughal et al. (2013) present a share of remittance-receiving households of approximately 7% in 2008 – a figure that lies below the lower bound of our estimate. Hence, for FYR Macedonia, the estimates based on the OeNB Euro Survey are within the broad range of estimates published in other studies.

Chart 7

Share of remittance-receiving individuals



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

Petreski and Jovanovic (2013) also estimate the share of remittance-receiving households for Bosnia and Herzegovina, reporting approximately 8% for 2007 and 6% for 2011. While the declining trend is similar to the OeNB Euro Survey estimates, the magnitude lies below our lower bounds. Other estimates for Bosnia and Herzegovina (Oruc, 2011) put the share of recipients at 11% in 2004, a figure that is much closer to the 10% average of our estimates for the 2009–2015 period. Giannetti et al. (2009) estimate the share of remittance recipients in the Czech Republic (5%), Poland (5%) and Hungary (13%) based on data for 2005. While our estimates for 2009 are similar in the case of the Czech Republic and Poland, a considerable difference exists for Hungary, which might indicate an underestimation for the latter country on our part. On the other hand, emigration rates from Hungary are comparatively low (at below 5%), and this observation is in line with our estimated recipient share of 3%.

The estimates and the comparisons with other published values suggest that it is difficult to assess the share of remittance recipients based on microdata, with survey-based estimates likely to underestimate the actual shares. On average, the share of invalid answers for this question in the OeNB Euro Survey ranges from 1.3% to 3.7%. It is safe to assume that invalid answers are more common among recipients of remittances than among respondents who do not receive money from migrants abroad, as income-related information is not always readily shared. In that case, the estimated shares of recipients would be underestimated, with the actual shares likely to be closer to the upper bounds of the estimates.

2.2 Typical recipients of remittances in CESEE countries

To shed light on the socio-economic characteristics of recipients of remittances and to determine whether they differ across countries, we use OeNB Euro Survey data to estimate simple linear probability models (LPMs), i.e. OLS models with a binary explanatory variable.[16] With LPMs we can estimate the partial effects of socio-economic characteristics on an individual's probability of receiving remittances. The dependent variable is a dummy variable that takes a value of one if individual i living in country j receives remittances in year t, r_{jti}. We estimate

$$r_{jti} = a_j + \Sigma_k \beta_j^k x_{jti}^k + \mu_{jt} + \in_{jti} \quad (1)$$

where a_j is a country-specific constant, μ_{jt} represents country-specific year fixed effects and $\in_{jti}$ is the remaining error term. x_{jti}^k represents k different individual and household-specific characteristics and includes the income category, the individual's education and age, the size of the household, the number of children (aged under 7 and between 7 and 15 years) and dummies that indicate whether the individual is unemployed or retired. The estimated coefficients β_j^k are partial correlations of the covariates with an individual's propensity to receive remittances and should not be interpreted as causal effects. As such, this analysis is merely indicative and descriptive in nature, and for lack of a sound treatment of endogeneity, it does not allow causal inference.

The above specification is run for each country, and the results are presented separately for the six EU CESEE countries (table 3) and the four non-EU CESEE countries in the sample (table 4). The main findings of the LPM estimations can be summarized as follows. High-income households appear to be more likely to receive remittances than households belonging to the low-income category. This holds for all non-EU CESEE countries and for all EU-CESEE countries, except for Poland and Romania. In EU CESEE countries, high-income households have a 1.9-percentage-point (Hungary) to 3.3-percentage-point (Czech Republic) higher probability of receiving remittances, as other covariates are held constant. Moreover, a statistically significant difference between low- and middle-income households is evident in the Czech Republic and in Croatia.

[16] *For simplicity, we rely in this exploratory analysis on LPM models as opposed to probit or logit models. The estimated coefficients can directly be interpreted as changes in the probability of receiving remittances. An advantage of probit or logit models is that they lead to predictions between zero and one, which might not be the case when applying the OLS framework. Nevertheless, LPMs are unbiased and consistent if the proportion of predictions outside the unit interval is not too large.*

Table 3

Determinants of the likelihood of receiving remittances: EU CESEE countries

	(1)	(2)	(3)	(4)	(5)	(6)
	BG	HR	CZ	HU	PL	RO
Medium income	0.000840 (0.899)	0.0181* (0.063)	0.00937* (0.051)	0.00311 (0.543)	–0.00885 (0.136)	–0.00399 (0.622)
High income	0.0237*** (0.004)	0.0291** (0.018)	0.0330*** (0.000)	0.0194*** (0.007)	0.00797 (0.255)	–0.00369 (0.667)
Medium education	0.0208** (0.026)	0.00306 (0.803)	–0.00755 (0.303)	–0.0169** (0.024)	–0.00162 (0.826)	0.000430 (0.963)
High education	0.0153** (0.021)	–0.0141 (0.169)	–0.000493 (0.951)	–0.0112 (0.139)	–0.00639 (0.313)	0.00687 (0.413)
Age	–0.00147 (0.123)	–0.000907 (0.496)	0.00116** (0.027)	–0.00158** (0.042)	–0.00220** (0.026)	–0.00339*** (0.001)
Age, squared	0.00000754 (0.495)	0.0000143 (0.390)	–0.0000106* (0.092)	0.0000117 (0.112)	0.0000268** (0.025)	0.0000129 (0.210)
Retired	0.0175 (0.124)	0.00853 (0.633)	–0.0144* (0.079)	–0.00600 (0.356)	–0.00791 (0.433)	0.0350*** (0.001)
Unemployed	0.0247** (0.014)	0.0284** (0.024)	–0.00820 (0.233)	0.0117 (0.144)	0.0156 (0.132)	0.0225** (0.029)
Household size	–0.0135*** (0.000)	–0.000810 (0.853)	–0.00595** (0.040)	–0.000299 (0.913)	0.00229 (0.445)	–0.0102*** (0.007)
Number of kids younger than 7	0.0292*** (0.001)	0.00439 (0.616)	0.00850 (0.125)	–0.00620 (0.285)	0.00948 (0.166)	0.00568 (0.542)
Number of kids aged 7 to 15	0.0187*** (0.003)	–0.00763 (0.215)	0.00168 (0.692)	0.00350 (0.487)	0.00532 (0.333)	0.00784 (0.278)
Observations	7,001	6,997	7,286	6,917	6,865	7,246

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

*Note: p-values in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01. All specifications include a constant and year fixed effects.*

In non-EU CESEE countries, the partial effects of high-income households are even larger: high-income households have a 5.1-percentage-point (Serbia) to 5.9-percentage-point (Albania) higher likelihood of receiving remittances than low-income households, and in Albania also middle-income households receive more remittances, ceteris paribus.[17] In the absence of methods that counteract endogeneity issues, distortions of the estimates due to reversed causality in the income-remittances nexus could prove an obvious caveat. However, given that households are not likely to add remittances to their stated income and the income variable enters as a categorical variable, biases of the estimates should be limited. The link between household income and the probability of receiving remittances can have important implications for the distributional effects of remittances.

If wealthier households are more likely to receive remittances, their overall income increases further, whereas that of poorer households remains unchanged. This may cause income distributions to widen. High-income households may be more likely to receive remittances because they can afford sending relatively more migrants abroad, have the means to ensure a better level of education prior to

[17] *Poprzenovic (2007) presents similar findings for Croatia.*

Table 4

Determinants of the likelihood of receiving remittances: non-EU CESEE countries

	(1)	(2)	(3)	(4)
	AL	BA	MK	RS
Medium income	0.0514***	0.0100	0.0112	0.00241
	(0.000)	(0.314)	(0.344)	(0.771)
High income	0.0590***	0.0544***	0.0534***	0.0509***
	(0.000)	(0.000)	(0.000)	(0.000)
Medium education	0.0693***	0.0112	0.0247*	–0.0201**
	(0.000)	(0.327)	(0.063)	(0.036)
High education	0.0265*	0.00983	–0.0153	–0.0263***
	(0.071)	(0.367)	(0.240)	(0.004)
Age	–0.00747***	0.00123	–0.000786	0.00181
	(0.007)	(0.352)	(0.612)	(0.148)
Age, squared	0.0000931**	–0.00000526	–0.00000235	–0.0000264*
	(0.010)	(0.742)	(0.891)	(0.092)
Retired	0.0292	0.0348**	0.0144	0.0355**
	(0.377)	(0.026)	(0.452)	(0.031)
Unemployed	0.0348**	0.0422***	0.0466***	0.0233***
	(0.023)	(0.000)	(0.000)	(0.009)
Household size	–0.0104	–0.00739*	–0.0163***	–0.00431
	(0.102)	(0.062)	(0.001)	(0.192)
Number of kids younger than 7	–0.00776	0.00548	0.0135	0.0150**
	(0.548)	(0.495)	(0.176)	(0.043)
Number of kids aged 7 to 15	–0.0199**	–0.00647	0.0134*	0.00804
	(0.017)	(0.281)	(0.084)	(0.172)
Observations	7,226	6,902	7,001	7,172

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

*Note: p-values in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01. All specifications include a constant and year fixed effects.*

migration (or can afford education abroad), which increases migrants' earning potential in their destination countries, or may rely on supportive international networks.[18] The link between remittances and changes in income inequality is not new of course. Falzoni and Soldano (2014), who examined Eastern European countries, or Raggl (2015), who focused on Western Balkan countries, found evidence for an inequality-increasing effect of remittances in the region at the macro-level.

Additional findings of the empirical exercise at hand support the idea of remittances being altruistically motivated, with senders intending to support families and friends especially during hardship and adverse situations. In particular in non-EU CESEE countries, but also in Bulgaria, Croatia and Romania, unemployed individuals are more likely to receive remittances. With respect to education, no homogeneous findings are manifest. While in Albania and Bulgaria a higher level

[18] *Stark et al. (1986) provide an early contribution that focuses on the link between remittances and inequality. They argue that remittances from "pioneer migrants," i.e. migrants from countries that are at the beginning of their migration history, tend to increase income inequality in the respective home country, as in such countries emigration is costly. Once emigration becomes more common, network effects reduce the cost of emigration, which then also enables members of poorer families to emigrate. Subsequently, the inequality-increasing effect of remittances might decrease.*

of education is found to be associated with a higher probability of receiving remittances, in Serbia the opposite is true. However, after controlling for income, we detect no statistically significant relationship between education and the likelihood of receiving remittances in several economies. In most countries, the larger the household size, the lower is the likelihood of receiving remittances, possibly in part because emigration reduces household sizes. Moreover, we find evidence in Romania, Bosnia and Herzegovina as well as Serbia that the probability of receiving remittances is higher if individuals are retired.

3 A synthesis of micro- and macro-level data

3.1 Approximating the intensive margin of remittances

Combining the evidence available at the country level with the individual data offers additional insights that go beyond the aggregate amount of remittance inflows to a country and the share of beneficiaries. The macro-level data allow approximating the total inflows of remittances to a country, and the latter can then be used to calculate average remittances per capita or the share of remittances in GDP. This information sheds light on the magnitude of remittances, thus covering a dimension absent in the survey data. The survey data, on the other hand, contain information on the number of remittance recipients in a country, which allows assessing the dispersion of both remittances and remittance recipients in the countries of our sample. Especially in trade and labor economics, such a measure refers to the extensive margin, which usually covers the range (i.e. number) of inputs, workers, trade partners, or in this case, recipients of remittances. The intensive margin, conversely, refers to the intensity (i.e. amount) of an economic action, e.g. the size of trade flows to a given trade partner, the number of working hours of a working individual, or the amount of remittances sent to a recipient. This intensive margin of remittances – the average amount of remittances received per recipient – cannot be gleaned from one of the data sources alone. By combining the information deducible from both macro- and micro-level data, however, the intensive margin of remittances can be approximated as outlined below.

The balance of payments statistics provide estimates of total inflows of remittances to a country i – R_i. By using the population of this country N_t, it is possible to compute the average remittances per capita. The OeNB Euro Survey data provide information about the extensive margin, namely the share of remittance recipients in the total population $\frac{N_i^r}{N_i}$, where N_i^r denotes the number of individuals in the population that receive remittances in country i. The intensive margin of remittances $\frac{R_i}{N_i^r}$ can thus be calculated as

$$\frac{R_i}{N_i^r} = \frac{R_i}{N_i}\frac{N_i}{N_i^r} \tag{2}$$

This indicator not only shows total inflows to receiving countries and the share of beneficiaries in the total population, but also sheds light on the average size of remittances per recipient. Contrary to remittances per capita, a measure that presumes an equal distribution of remittances across the entire population of a country, the intensive margin of remittances can help identify distributional effects of remittances. If total remittances to a country are distributed among a small number of recipients, the average amount per recipient is comparatively high, and depending on the recipients' income level, the distributional effects may be

substantial. If, however, total inflows are distributed among a large group of households, the average amounts are lower, and remittances have a limited impact on the overall dispersion of income.

The estimated average intensive margin of remittances and the corresponding upper and lower bounds of the estimates are shown in chart 8. The upper and lower bounds are determined using the 95% confidence intervals that are calculated for the shares of remittances based on the survey data. While the intensive margins (blue bars) are based on the mean share of remittance-receiving households, the lower bound of the intensive margin is calculated by using the upper-bound estimates of the recipient shares and the upper bound of the intensive margin is calculated by using the lower-bound estimate of the recipient shares.[19] The bounds allow an assessment of the uncertainty associated with the respective estimates and the chart shows that imprecision is pronounced especially for countries with high intensive margins.

Chart 8

Intensive margin of remittances: average, 2009–2015

Average remittances received per recipient, current USD

Source: Author's calculations based on World Development Indicators (World Bank) and OeNB Euro Survey.

Among the countries under review, the intensive margin of remittances is estimated to be lowest in Romania, FYR Macedonia and Albania. Given the low values of per capita remittances and remittances as shares in GDP in Romania and FYR Macedonia, this finding is not surprising. Macrodata for Albania, however, suggest that remittances per capita are high. Besides, the share in GDP is close to 10%, which, given the low intensive margin, implies a large share of remittance recipients in the population. The microdata evidence presented in chart 7 corroborates this. Although Albania receives comparatively sizeable inflows of remittances, the amount per recipient is low as the number of recipients is high.[20] Our estimates suggest that Hungary records the highest intensive margin of remittances, at between USD 3,000 and USD 15,000 per year. In this country, the estimated share of remittance recipients is comparatively low on average, and with remittances per capita and shares in GDP having been high in recent years, the average amount per recipient is estimated to be high. The uncertainty associated with the microdata-based estimated shares in remittances translates into large confidence intervals for the estimate for Hungary. Hence, the result should be

[19] *The asymmetry of the bounds around the mean is attributable to the estimation approach used: The inverse of the upper (lower) bound of the shares is multiplied by remittances per capita to obtain the lower (upper) bound of the intensive margin, and as the deviations from the mean estimate do not enter additively but multiplicatively, the bounds are not symmetrical around the mean. This asymmetry implies that an underestimation of the shares (as suspected) leads to a relatively strong overestimation of the intensive margin, and an overestimation of the shares would lead to a comparatively small underestimation of the intensive margin.*

[20] *Using data from the early 2000s, de Sousa et al. (2009) published a survey-based estimate of approximately USD 700, which seems rather low given that the remittances per capita already ranged from USD 250 to USD 300 in those years.*

interpreted with caution. A comparison with recent literature suggests that the share of remittance recipients estimated for Hungary based on our survey data might underestimate the actual shares (see section 2.1). For this reason, an average amount closer to the lower bound of the estimated intensive margin seems more likely. Also for Croatia, the intensive margin of remittances is estimated to be comparatively high. Annual per capita remittances to the country exceed USD 500, and with a share of recipients of less than 10%, remittances per recipient of USD 7,000 are not astonishing. Yet, on the assumption that the share of recipients is underestimated, the lower bounds of the estimates should be considered. The intensive margins of remittances in Bulgaria, Poland, Bosnia and Herzegovina and the Czech Republic are estimated to lie between USD 3,000 and USD 6,000 per annum. Barbone et al. (2012) confirm a similar figure for Poland. For Bosnia and Herzegovina, Petreski and Jovanovic (2013) peg remittances per recipient at approximately USD 3,200 in 2011, which corresponds to our lower-bound estimate of the same year. In Serbia, the intensive margin of remittances is estimated to range from USD 5,000 to USD 8,000 per year. Although these amounts appear high, and no direct comparison is found in the literature, remittances from Switzerland to Serbia varied between CHF 200 and CHF 50,000 in the early 2000s according to the International Organization for Migration (IOM, 2007). Also, the majority of households received between CHF 1,000 and CHF 8,000 per year (mean: approximately CHF 4,800). When we consider the considerable increase in per capita remittances since the years the estimates are based on, the figures correspond to the lower part of our estimated range.

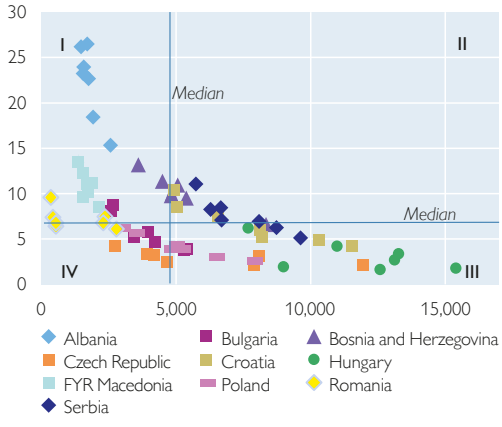
3.2 The extensive vs. the intensive margin of remittances in CESEE

In the following, the extensive and intensive margins of remittances are related to each other graphically (see chart 9). Both margins of remittances are plotted against each other for all country-years available (10 CESEE countries between 2009 and 2015), where each color corresponds to a specific country. As one would expect, the overall relationship between the intensive and the extensive margins is negative, which indicates that a large relative number (share) of recipients is associated with lower amounts received, and vice versa. The chart moreover shows the median of the intensive and extensive margins (blue vertical and horizontal lines) and divides the plot area into four quadrants. These quadrants can be interpreted as four categories that define the nature of remittances, and all country-year pairs can be allocated to one or more of these categories.

Chart 9

Extensive and intensive margins of remittances

% of remittance recipients in population, yearly observations, 2009–2015



Source: Author's calculations based on World Development Indicators (World Bank) and OeNB Euro Survey.

Many receive little (quadrant I): A comparatively large share of the population (= extensive margin) receives a comparatively small amount of

remittances (= intensive margin). Albania and FYR Macedonia can be assigned to this category for all years observed. The receipt of remittances is widespread in these countries, but the amounts per average recipient are rather small. The distribution of data points is mainly vertical. Hence, changes in overall remittance inflows predominantly result in changes at the extensive margin, while the intensive margin remains more or less constant. A fraction of the data points from Bosnia and Herzegovina (2009–2011), Bulgaria (2014–2015) and Romania (2009–2010, 2013) are also found in this quadrant.

Many receive much (quadrant II): A comparatively large share of the population receives a comparatively large amount of remittances. Serbia, and for some years also Bosnia and Herzegovina (2012–2015) and Croatia (2010, 2012–2013, 2015), can be assigned to this category, with the latter two figuring at the quadrant border. No country falls in this category for the full period. This constellation does not appear to be persistent. For all three countries, the intensive margin seems to be more volatile than the extensive margin. In other words, the amounts of remittances change, while the share of recipients remains comparatively constant.

Few receive much (quadrant III): Only a comparatively small share of the population receives a comparatively large amount of remittances. In Hungary, the share of remittance recipients is estimated to be low, but the sizeable overall inflows to the country imply that those few recipients receive comparatively large amounts of remittances. The horizontal spread of Hungarian data points suggests that changes in overall remittances result mainly in changes at the intensive margin (i.e. the amounts) and to a lower extent at the extensive margin (i.e. the share of recipients). For some years, Croatian (2009, 2011, 2014) and Serbian (2011–2012) data points are in this quadrant, too, while in other years, Croatia and Serbia fall into quadrant II. This suggests that in these two countries changes in overall remittance inflows tend to be associated with changes at the extensive margin rather than the intensive margin. The Czech Republic is spread across quadrant III (2013–2015) and quadrant IV (2009–2012), which points to considerable heterogeneity at the intensive margin.

Few receive little (quadrant IV): Only a comparatively small share of the population receives comparatively small amounts of remittances. In the Czech Republic and – in some years – also in Bulgaria and Poland, the share of remittance recipients is low. On account of the rather low overall inflows of remittances, the amounts per recipient are likewise low compared with other country-year pairs in the sample. The variation of the data points of these three countries suggests that the intensive margin of remittances reacts more strongly to changes in overall remittance inflows than the extensive margin.

4 Summary

Emigration rates from CESEE countries have been high – in particular since the early 1990s – compared with global averages. At present, the number of emigrants from both Albania and Bosnia and Herzegovina equals approximately 40% of the given country's current population. Among the CESEE countries under review, the Czech Republic and Hungary record the lowest emigration rates, but, at 9% and 6%, they are still considerably above the global average of 3%. Emigration has various consequences for the source countries – brain drain, brain gain, and

challenges for social security systems are just some examples. Remittances, too, directly result from migration, and an in-depth analysis of their relevance in the receiving economies is of utter importance. For many countries, especially in CESEE, remittances are an important source of foreign exchange. It has been shown repeatedly that – contrary to other private capital flows – remittances are countercyclical with respect to the GDP of the receiving economies. Therefore, they can help smooth consumption patterns, counteract economic shocks or hardships experienced by the receiving households, contribute to the financing of small-scale enterprises, or serve as collateral and help households overcome credit constraints. As a result, investment in physical and human capital is fostered by remittances, which in turn has implications for economic growth and local development.

Remittance inflows to CESEE countries mirror the high emigration rates. They have followed a pattern similar to that observed globally, but exhibited a more pronounced drop during the crisis and a stronger subsequent recovery. Between 2014 and 2015, growth in remittances to CESEE was negative, but the recent contraction of FDI inflows was even more marked so that in 2015 remittances exceeded the level of FDI inflows. In aggregate terms, Poland receives the highest amount of remittances among the CESEE countries under review, but in per capita terms or as shares in GDP, the non-EU CESEE countries as well as Croatia and Hungary receive considerably more. At approximately 1.4%, the share of remittances in GDP between 2013 and 2015 was lowest in Poland and highest in Bosnia and Herzegovina (11%), Albania and Serbia (9% each).

Adding insights from individual-level data reveals that the extensive margin of remittances, i.e. the share of recipients, varies considerably both over time and across countries. It is highest among the non-EU CESEE countries in the sample, especially in Albania, but also in FYR Macedonia and Bosnia and Herzegovina, and lowest in Poland, the Czech Republic and Hungary.[21]

According to the results of a simple econometric exercise using the OeNB Euro Survey data, there is a positive relationship between income and the likelihood of receiving remittances. High-income households are more likely to receive remittances from abroad and therefore their incomes increase further. As low-income households have a lower probability of receiving remittances, remittances cause the dispersion of income across households to widen. This inequality-enhancing property of remittances confirms previous findings in the literature. The analysis further shows that the probability of receiving remittances increases for retired persons, for members of a small household and for unemployed persons (only in non-EU CESEE countries). With respect to recipients' level of education, no clear relationship is found after controlling for income.

Relating the amounts of remittances deduced from macrodata to the share of recipients as estimated based on microdata allows the calculation of the so-called intensive margin of remittances, i.e. the average amount per recipient. Our findings suggest that the average amounts received are lowest in Romania, FYR Macedonia and Albania, and highest in Croatia and Hungary. In particular for the latter two countries, estimation uncertainty is high, however. The overall

[21] *The shares of remittance recipients are correlated with the emigration rates of the countries, with the shares plausibly corresponding to the number of emigrants in spite of the high volatility.*

relationship between the extensive and the intensive margin is negative, when we pool all country-year pairs. This indicates a tradeoff between the dispersion of remittances and the magnitude of payments received by households. A graphical representation of this relationship helps classify the nature of remittances by country, as it allows assessing whether changes in the overall magnitude of remittances tend to affect primarily the intensive margin (and hence the amounts received per recipient, as e.g. in the Czech Republic, Hungary or Serbia) or the extensive margin (i.e. the number of recipients, which is, for instance, the case in Albania and FYR Macedonia).

The descriptive analysis in this paper shows that remittances to CESEE countries are still a relevant source of household income even when their growth rates are slowing down.

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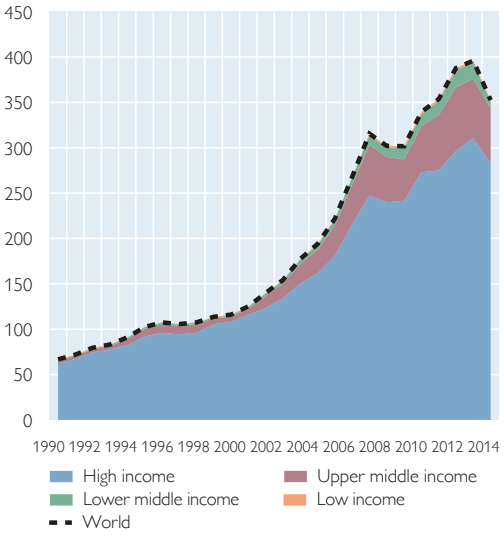
Annex

Chart A1

Remittance outflows by sending economies

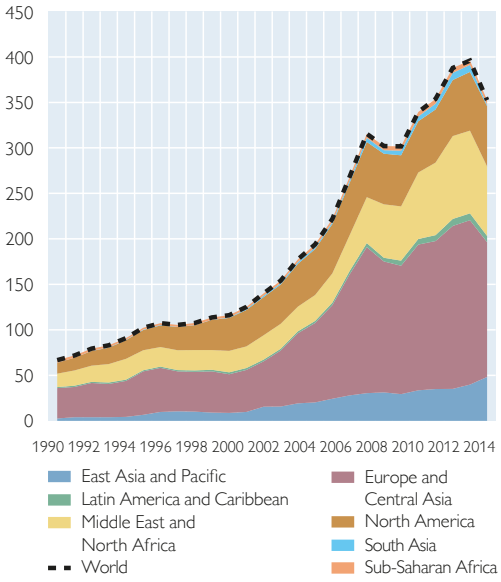
Outflows by income group of the sending economy

Current USD billion



Outflows by region of the sending economy

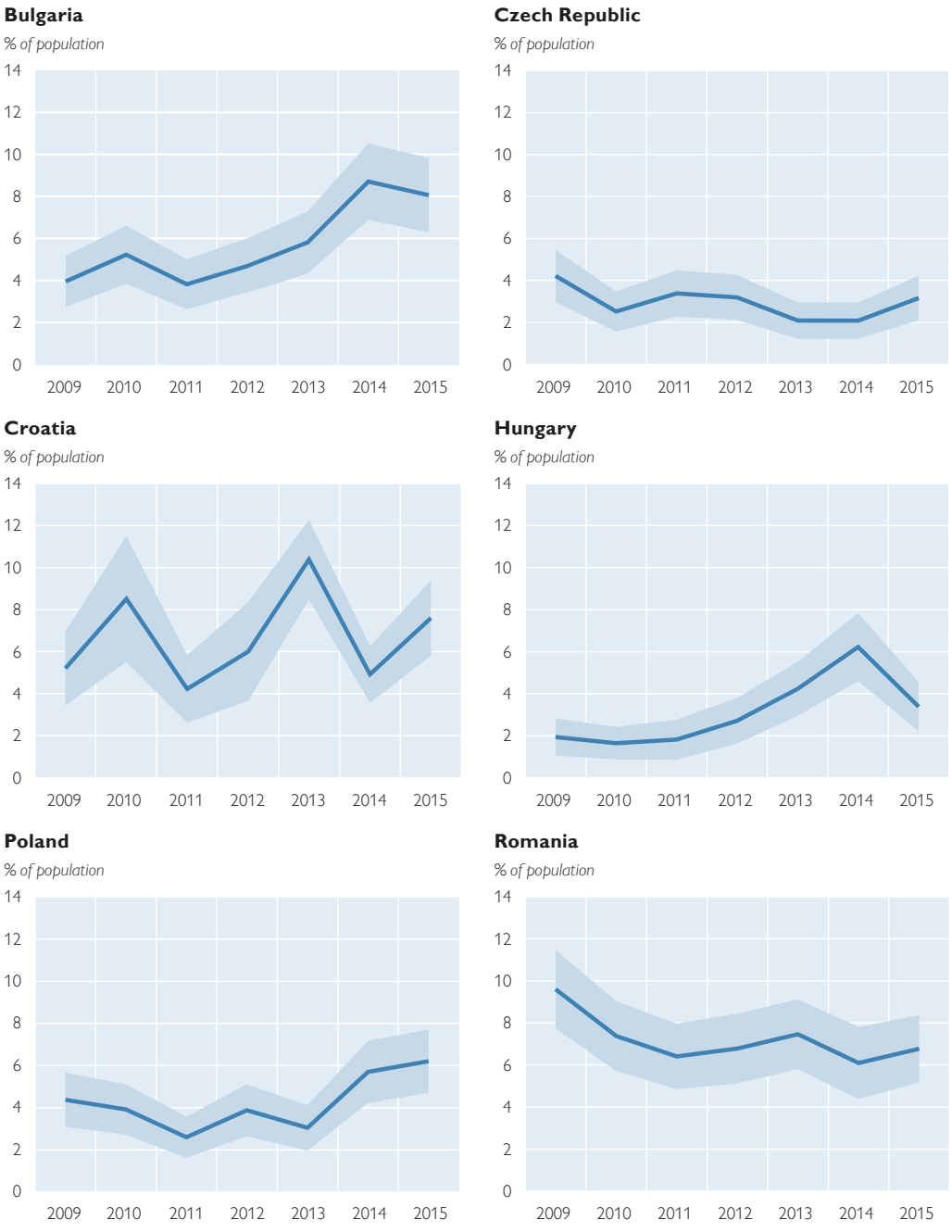
Current USD billion



Source: World Development Indicators (World Bank).

Chart A2

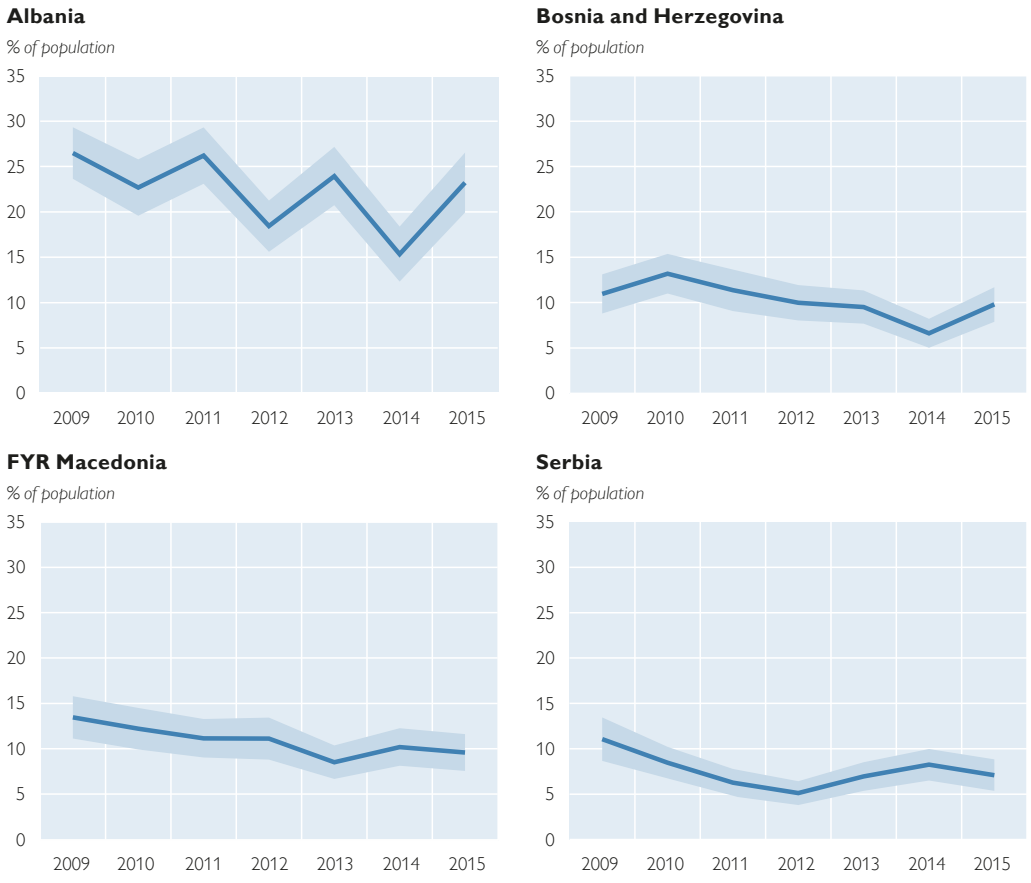
Share of remittance recipients (including upper and lower bounds, 95%): EU CESEE countries



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

Chart A3

Share of remittance recipients (including upper and lower bounds, 95%): non-EU CESEE countries



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