

# A geographic perspective on banking in Central, Eastern and Southeastern Europe

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*This study presents a novel dataset covering the geographic locations of bank branches in ten Central, Eastern and Southeastern European (CESEE) countries. Based on these data, we describe the spatial provision of banking services and study whether domestically owned and foreign-owned banks show different branching behavior. We find that the provision of banking services varies substantially between and within countries. Regressions show that these differences strongly correlate with the respective countries' GDP per capita. With regard to the question whether foreign and domestic banks show different branching behavior, we detect marked differences across countries. Thus, there is no "one-size-fits-all" explanation for the market behavior of foreign (and Austrian) banks in CESEE. In general, foreign banks in CESEE tend to branch in regions with higher population density. An exception among foreign banks are Austrian banks, which, on average across regions, also locate in areas with lower population density. When we match bank branch location data with household survey data, we find that the majority of CESEE households have a bank available within 2 km. Nevertheless, a sizeable share of CESEE households live 5 km or farther from the nearest bank branch.*

*We provide indicators of bank branch coverage, density, concentration and ownership at Nomenclature of Territorial Units for Statistics 3 (NUTS 3) level for download on the OeNB website.*

*JEL classification: D12, G11, D80*

*Keywords: bank branches, local market structure, spatial competition, foreign banks, Central, Eastern and Southeastern Europe, database*

The geography of banking may have a significant impact on financial development in both developed and developing economies. A financial system could be large in terms of assets but have a relatively sparse bank branch network if banks focus on big corporations and regional agglomerations. As the accessibility of banking products and finance for a broad range of households and enterprises boosts economic development, policymakers may prefer banks to be physically accessible throughout the country, including poorer regions and less populated areas.<sup>2</sup> Furthermore, competition at the regional or local level has implications for access to, and the prices of, banking products. In a number of countries, policy measures have been taken to improve geographic coverage and increase competition and efficiency in the banking sector. One example is the 1994 Riegle-Neal Interstate Banking and Branching Efficiency Act in the United States that allowed nationwide branching in the U.S.A. (Dick, 2006). Another example is the 2005 Master Circular on Branch Authorisation in India, which specified that for each new bank branch in an "attractive, already banked" market, banks also had to open a new branch in an underbanked market (Young, 2015).

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<sup>2</sup> We focus on the availability of banking infrastructure and do not aim to contribute to the debate on the possible downsides of financial inclusion with regard to access to credit and households' overindebtedness.

The literature on spatial competition and market structure finds that the spatial distribution of bank branches within countries – at all levels of economic development – shows large disparities (Westrich et al., 2007; Okeahalam, 2009; Huysentruyt et al., 2013). Looking at bank branch coverage over time, the literature finds that regulation and banking market restructuring can significantly change geographic coverage and market structure (Dick, 2006; Damar, 2007; Sabater, 2013). In their comprehensive overview on the geography of banking in Europe and the U.S.A., Alessandrini et al. (2009) argue that two main trends characterize the deep changes observed in the geography of banking over the past two decades: (1) The regulatory easing of geographic restrictions, the opening of new branches and technological progress, including digitalization, reduced the “operational” distance between banks and their customers,<sup>3</sup> and (2) banking market consolidation, in particular mergers and acquisitions, reduced the number of banks and increased the “functional” distance between banks and their customers.

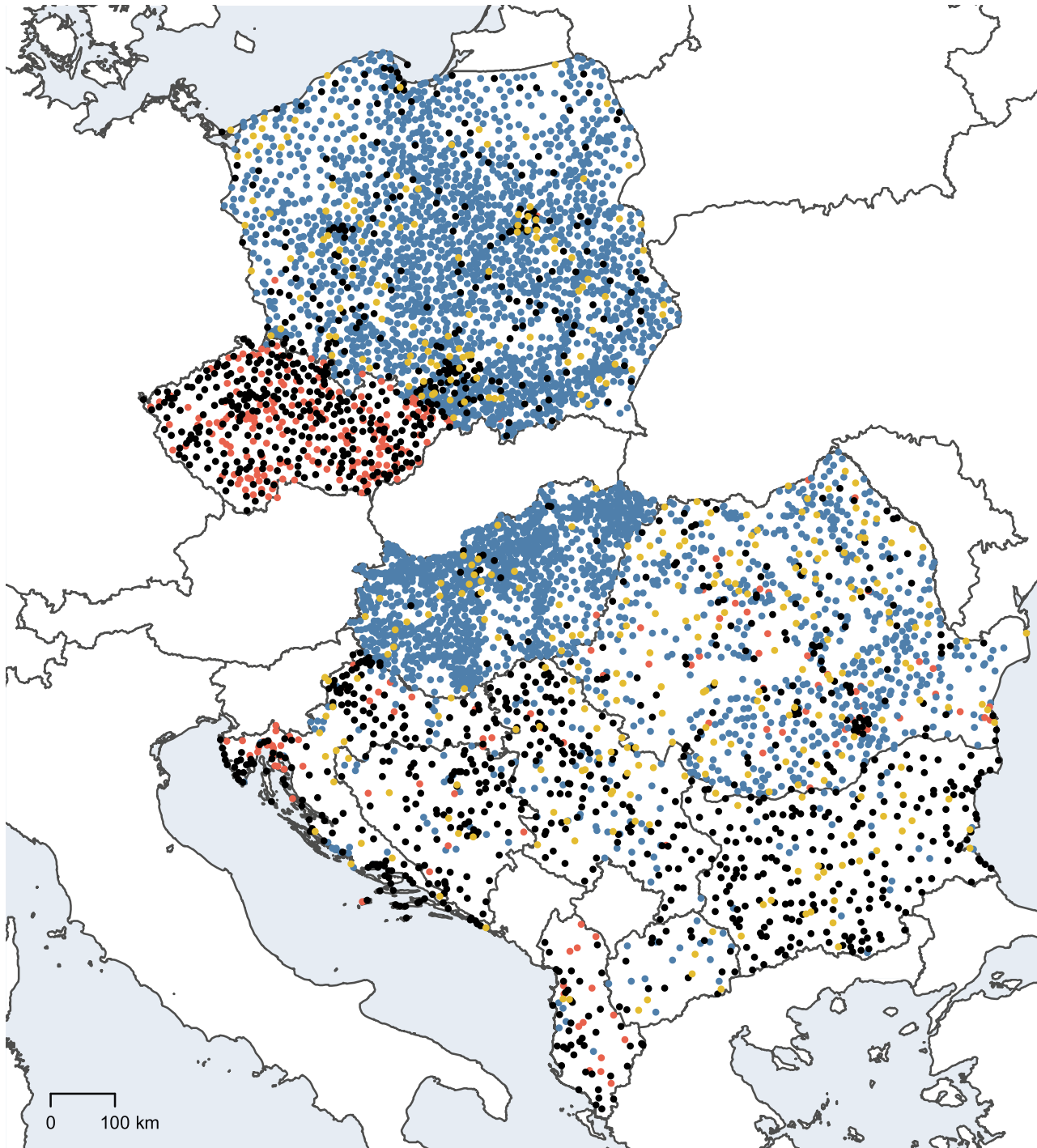
The literature has argued that the geographic distribution of bank branches and the local banking market structure have a substantial impact on households and enterprises. For enterprises, financing constraints may increase with the physical distance to bank branches (Alessandrini et al., 2009); loans tend to be costlier when they are “long distance” loans (Knyazeva and Knyazeva, 2012) and loan contracts tend to be more restrictive in that case (Hollander and Verriest, 2016). For households, previous research finds that there is a significant positive correlation between the number of bank branches and neighborhood average income (Westrich et al., 2007; Okeahalam, 2009; Huysentruyt et al., 2013), i.e. poorer households tend to live in areas where bank branches are fewer. The absence of banks has an impact on the financial inclusion (i.e. ownership of accounts and access to credit) of households: Globally, every fifth adult without a bank account names *lack of physical access to banks* as a reason for not having an account (Demirguc-Kunt et al., 2015). Distance to bank branches and bank branch density significantly affect households’ demand for and use of banking services (Ho and Ishii, 2011; Brown et al., 2015) and ultimately consumer welfare (Dick, 2006, 2008).

In this paper, we focus on the geography of banking in Central, Eastern and Southeastern Europe (CESEE). For several reasons, this region provides for a particularly interesting case study: During the transition from planned to market economies in the 1990s, the CESEE countries started building banking systems from scratch (see e.g. Barisitz, 2008). Therefore, both households and enterprises only have a comparatively short history of interactions with banks. Financial inclusion is still below the average of non-CESEE EU Member States.<sup>4</sup> In addition, during the transition process, CESEE economies developed regional disparities which parallel, or exceed, those of many Western European economies (Huber, 2007), which suggests that bank coverage and market structure will also vary significantly within countries. In this context, Sokol (2013) argues that more generally

<sup>3</sup> Stern (2017) provides an analysis of the fintech sector in CESEE and shows that most of the new technologies have so far been used only on a small scale in the countries covered by our analysis. Furthermore, a recent World Bank report shows that in Central Europe 30% of individuals do not use the Internet and that the percentage of non-Internet users is even higher in the Western Balkans. In addition, there is a significant urban-rural divide in households’ fixed Internet access (Kelly et al., 2017).

<sup>4</sup> For data on enterprise access to finance, see [www.enterprisesurveys.org/](http://www.enterprisesurveys.org/). For data on households’ financial inclusion, see [www.worldbank.org/en/programs/globalindex](http://www.worldbank.org/en/programs/globalindex).

### Bank branches by bank ownership



● Foreign/non-Austrian    ● Domestic    ● Equal share    ● Austrian

Source: OeNB CESEE bank branch data.

Note: Each dot indicates a village or city with at least one bank branch. Colors indicate that the majority of branches in the respective villages or cities are domestic (blue), foreign/non-Austrian (black), Austrian (red) or that the shares of foreign and domestic branches are equal (yellow).

the current literature lacks research focused on understanding how finance influences social and spatial inequalities. Finally, the majority of banks in CESEE is foreign owned, and previous research has argued that foreign-owned banks significantly differ from domestically owned banks in how and to whom they provide banking services (Beck and Brown, 2015).

We introduce a new dataset covering all bank branches serving households in ten CESEE economies<sup>5</sup> that is unique in its depth and granularity.<sup>6</sup> It covers 210 banks with 28,540 bank branches. Chart 1 illustrates the location of bank branches across the ten CESEE economies covered by our analysis.

In this paper, we use this dataset to comprehensively describe and analyze local banking market structures in CESEE. In particular, we are interested in the variation of bank coverage, density and concentration between and within countries. Moreover, we study the differences between domestically owned and foreign-owned banks. Matching OeNB CESEE bank branch data with fine-grained data on local economic activity and urbanization levels, we analyze the determinants of banks' location choice<sup>7</sup> and find that foreign-owned banks tend to have more branches in economically more developed, urban areas where bank competition is higher. We conclude by providing a descriptive snapshot on how accessible banking services are for CESEE households. To facilitate research on how the banking environment affects economic outcomes, we make indicators of bank branch coverage, density, concentration and ownership available for download at Nomenclature of Territorial Units for Statistics 3 (NUTS 3) level.<sup>8</sup>

As we focus on banks serving households, our data are distinct from Beck et al. (2018), who collected data for 21 transition economies on all bank branches that provide funding to small and medium-sized enterprises (SMEs), excluding those serving households or large corporates, covering a total of 422 banks and 38,310 bank branches in 2009. In the following, we introduce the data used in our analysis.

## 1 Data

At the center of our analysis is a newly collected dataset on the location of bank branches serving households in ten CESEE countries.<sup>9</sup> We match these data with information on bank ownership, fine-grained data on local economic activity and a range of indicators at NUTS 3 level.

<sup>5</sup> Throughout this study, the countries analyzed will be listed alphabetically and grouped according to their level of integration into the EU (EU Member States followed by (potential) EU candidate countries).

<sup>6</sup> For reasons of simplicity, we will refer to this dataset as "OeNB CESEE bank branch data."

<sup>7</sup> We treat the existing structure of branches as reflecting a location choice. However, we are aware of the fact that foreign banks may have acquired existing bank branch networks via mergers and acquisitions so that at the time of the merger or acquisition, the branch networks were a given.

<sup>8</sup> Nomenclature of Territorial Units for Statistics (NUTS) by regional level is a hierarchical system for dividing the economic territory of the European Union. NUTS 3 are the finest regional divisions, with a minimum of 150,000 and a maximum of 800,000 citizens per region. Thus, NUTS 3 regions can be equivalent to larger cities. The (potential) EU candidate countries Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia have either already been, or are in the process of being, included in NUTS.

<sup>9</sup> The OeNB CESEE bank branch data are intended to be matched with OeNB Euro Survey data to help analyze CESEE households' financial decisions. The OeNB Euro Survey focuses on understanding the determinants of euroization and is therefore only conducted in CESEE countries whose legal tender is not the euro (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia). This means that we neither collect OeNB CESEE bank branch data nor Euro Survey data for Slovakia, Slovenia, Montenegro and Kosovo.

### 1.1 The OeNB CESEE bank branch data

For each bank serving households in the countries analyzed, we collected data on the number and location of all bank branches (address, latitude and longitude). In total, our dataset contains the geographic coordinates of 28,540 bank branches operated by 210 banks. For all countries analyzed, data were collected in 2013. Some central banks provided us with information on all bank branches in their countries; for the majority of CESEE countries, however, the data had to be hand-collected, which meant gathering the information on bank branches from the websites of all banks serving households in a given country.<sup>10</sup> For countries for which information on bank branches was hand-collected, our data cover all important banks serving households. We excluded a few very small banks serving households, however, which means the list of banks is not comprehensive. We verified that all the important banks are indeed covered by cross-checking our data with information from the OeNB Euro Survey of CESEE households. This cross-check showed that less than 5% of households are customers of a bank not covered by the OeNB CESEE bank branch data.<sup>11</sup> To ensure comparability of the OeNB CESEE bank branch data across countries, we also exclude very small banks in countries for which information on all bank branches is available from the respective central banks. Banks that serve less than 5% of all households are dropped from the dataset.<sup>12</sup>

Because data are hand-collected, data verification is of utmost importance. We perform data verification by cross-checking our data with several external sources which provide indicators of bank coverage at the country level (see annex, table A2). These country-level indicators are defined for all bank branches including those serving enterprises only, and are not defined for bank branches serving households and, therefore, are only a benchmark. We further check that banks' market shares in terms of assets positively correlate with their market shares in terms of bank branches (see annex, chart A1). Taken together, these cross-checks indicate that the OeNB CESEE bank branch data provide a valid picture of the banking landscape in CESEE.

We obtained the geographic coordinates of branch locations using Google Maps. For analyzing household finance, the accuracy of these geographic coordinates is critical as the distance to the nearest bank and bank density influence households' financial inclusion at a very local level (Dick, 2008; Ho and Ishii, 2011). In general, our geographic coordinates are accurate at the street level and can thus show branch dispersion within cities. For smaller villages, our geographic coordinates are mostly accurate at the level of the village center. This applies to 6% of bank branches.<sup>13</sup>

<sup>10</sup> For a random sample of the geocoded addresses of the hand-collected data we used Google Streetview to verify the existence of these branches.

<sup>11</sup> In fact, in all countries except Serbia, 3% of households are customers of a bank not covered by the OeNB CESEE bank branch data.

<sup>12</sup> During the data collection process, we took care to distinguish between different types of bank branches. While some branches may offer only simple transaction services, others may offer loans. We aimed to harmonize the definition of "a bank branch serving households" to mean a bank branch at which an individual can at least open a bank account.

<sup>13</sup> The share of bank branches that are geocoded at the village center and not at the street level varies strongly between countries (Bulgaria: 2.8%, Croatia: 1.8%, the Czech Republic: 0%, Hungary: 0%, Poland: 0.9%, Romania: 7.5%, Albania: 48.7%, Bosnia and Herzegovina: 15.4%, FYR Macedonia: 19.1% and Serbia: 17.0%).

In addition to street-level geographic coordinates, we collected the geographic coordinates of the city or village center where each bank branch is located. This allows us to assign all branches to the center of a village or city. Thus, we can describe local banking markets not only in terms of radii in kilometers around each bank branch but also in terms of administrative areas.

## 1.2 Bank ownership

We combine the OeNB CESEE bank branch data with information on the global ultimate owner of the respective banks. We obtained this information from Bureau van Dijk's bankscope and the Claessens and van Horen (2015) database. For some smaller banks, we obtained the information directly from the respective banks' websites.<sup>14</sup> Table 1, panel A, shows the number of banks serving households for each country. We see a strong variation across countries in the number of banks

Table 1

### Number of banks and bank branches by bank ownership

#### Panel A. Number of banks by bank ownership

	Number of banks	Of which: domestic banks	Of which: foreign banks	Share of Austrian banks in foreign banks
	%			
Bulgaria	21	33.33	66.67	7.14
Croatia	28	50.00	50.00	28.57
Czech Republic	19	10.53	89.47	17.65
Hungary	11	36.36	63.64	28.57
Poland	24	45.83	54.17	7.69
Romania	27	22.22	77.78	19.05
Albania	11	18.18	81.82	11.11
Bosnia and Herzegovina	21	47.62	52.38	27.27
FYR Macedonia	16	37.50	62.50	10.00
Serbia	32	34.38	65.63	14.29

#### Panel B. Number of branches by bank ownership

	Number of branches	Of which: domestically owned branches	Of which: foreign-owned branches	Share of Austrian- owned branches in foreign-owned branches
	%			
Bulgaria	2,506	25.06	74.94	7.93
Croatia	1,148	23.26	76.74	34.28
Czech Republic	2,806	3.39	96.61	36.04
Hungary	2,718	73.03	26.97	34.92
Poland	10,432	56.08	43.92	6.44
Romania	5,207	34.34	65.66	37.23
Albania	460	13.91	86.09	25.25
Bosnia and Herzegovina	812	21.31	78.69	35.68
FYR Macedonia	413	45.04	54.96	11.89
Serbia	2,038	30.47	69.53	13.55

Source: OeNB CESEE bank branch data.

<sup>14</sup> Until 2015, UniCredit's CESEE subsidiaries, with the exception of those in Poland, were managed by UniCredit Bank Austria AG on behalf of the Italian-based global ultimate owner UniCredit S.p.A. Therefore, these banks are treated in the data as "Italian owned" and not "Austrian owned."

relevant for households. With the exception of Croatia, the percentage of domestically owned banks is below 50% in all CESEE countries under observation. In Croatia, Hungary, and Bosnia and Herzegovina more than one-quarter of foreign-owned banks serving households are Austrian.

Table 1, panel B, shows the number of bank branches serving households in each country. With the notable exceptions of Hungary, Poland, Romania and FYR Macedonia, the share of foreign-owned branches in the total number of branches is higher than that of foreign-owned banks in the total number of banks, i.e. foreign-owned banks have a higher number of branches than domestically owned banks. In Hungary and Poland, the comparatively high number of branches among domestically owned banks is related to the presence of domestically owned cooperative banks. In the Czech Republic, less than 4% of bank branches have a domestic owner. Compared to their share among foreign banks, Austrian banks tend to have more branches in CESEE (except in Serbia and Poland) than other foreign banks.

### 1.3 Additional data

To calculate indicators of bank coverage and density, we combine the OeNB CESEE bank branch data with information on surface area and population size at the country and NUTS 3 levels. We further match the OeNB CESEE bank branch data with indicators of local economic activity (i.e. average stable night lights) and GDP (where available at NUTS 3 level) and indicators of the urbanization level (“urban fabric,” see annex, table A3 for a definition) and further indicators that could influence banks’ location choice at NUTS 3 level. Table A3 in the annex provides a detailed definition and the sources of all variables.

## 2 Geographic coverage and bank branch density – a disaggregated view

Is the number of bank branches high or low for the country in question? To answer this question, we put the data from table 1, panel B, into perspective by expressing them in terms of population aged 14 years or older and in terms of country size (table 2). To provide a comparison with a country that did not undergo transition, we also collected corresponding data for Austria.<sup>15</sup> In Austria, there are on average 1,633 adult inhabitants per bank branch and 54 bank branches per 1,000 km<sup>2</sup>. These figures vary substantially between Austrian NUTS 3 regions, namely from 970 to 5,866 adults per branch and from 17 to 720 branches per 1,000 km<sup>2</sup>. These data show that Austria has by far the lowest number of adults per bank branch. Bank branches in Bosnia and Herzegovina and in FYR Macedonia have more than twice as many adults per bank branch, and those in Albania more than three times as many. Moreover, Austria has the highest number of bank branches per 1,000 km<sup>2</sup>, followed by the Czech Republic and Poland. Bank branch density is found to be lowest in Bosnia and Herzegovina, FYR Macedonia and Albania.

Table 2 also gives a first indication that bank branch density strongly varies within countries. As a case in point, the number of adults per branch differs by 6,800 between regions in FYR Macedonia and by 12,200 between regions in Albania.

<sup>15</sup> For Austria, data on bank branches is available for download from the OeNB website at [www.oenb.at/Statistik/Klassifikationen/Bankstellenverzeichnis.html](http://www.oenb.at/Statistik/Klassifikationen/Bankstellenverzeichnis.html). We obtained the geographic coordinates for these data following the same procedure as for the CESEE data. Furthermore, we combined the data for Austria with the same indicators on surface area, population and economic activity we used for CESEE.

Table 2

**Bank branch density****Panel A. Number of adults (population aged 14+) per bank branch**

	Country average	NUTS 3 minimum	NUTS 3 maximum	Difference between NUTS 3 minimum and maximum
Bulgaria	2,497	2,129	4,535	2,406
Czech Republic	3,197	2,033	6,935	4,901
Croatia	3,145	2,505	4,734	2,229
Hungary	3,111	2,163	6,263	4,100
Poland	3,104	2,473	5,478	3,005
Romania	3,236	2,213	7,343	5,130
Albania	5,077	3,200	15,376	12,177
Bosnia and Herzegovina	4,052	..	..	..
FYR Macedonia	4,149	3,503	10,258	6,755
Serbia	2,930	2,667	6,835	4,168

**Panel B. Number of bank branches per 1,000 km<sup>2</sup>**

	Country average	NUTS 3 minimum	NUTS 3 maximum	Difference between NUTS 3 minimum and maximum
Bulgaria	23	10	478	468
Czech Republic	36	3	289	285
Croatia	21	19	1,002	983
Hungary	30	10	726	715
Poland	34	11	1,277	1,265
Romania	23	6	3,550	3,544
Albania	17	3	108	105
Bosnia and Herzegovina	16	..	..	..
FYR Macedonia	16	8	97	88
Serbia	23	8	194	186

Source: OeNB CESEE Bank branch data, authors' calculations.

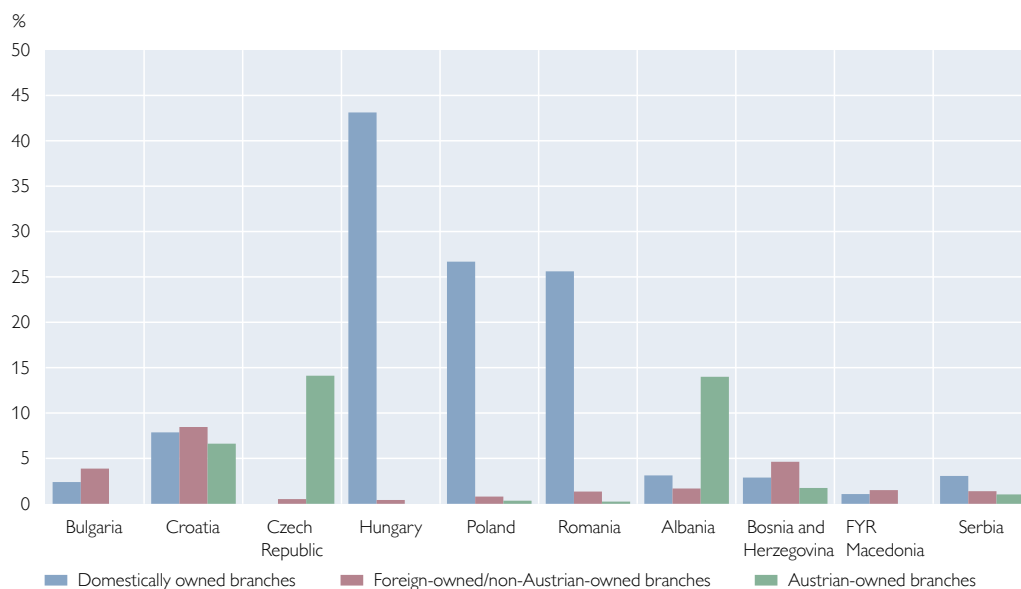
The number of branches per 1,000 km<sup>2</sup> varies by up to 3,500 in Romania and by up to 1,300 in Poland. Thus, as expected, bank branch coverage and density mirror other regional disparities found in the CESEE economies.

In addition to these regional disparities, we find that bank branches are locally clustered in urban areas. For the majority of branches, the distance to the next bank branch of any bank is less than 1 km. Chart 2 shows the percentage of bank branches which are farther than 5 km from the next bank branch. These branches are likely located in remote areas with fewer possible customers but also lower competition from other banks. With the exception of Hungary, Poland and Romania, less than every fifth bank branch in the CESEE countries observed is located more than 5 km from the next branch of any bank.

Previous research shows that foreign banks tend to serve wealthier households (Beck and Brown, 2015). This would imply that bank branch density within countries varies by global ultimate owner or, to put it differently, that foreign-owned banks are less likely to have branches in remote areas, which are often poorer. Chart 2 confirms differences between the location choice made by foreign and domestic banks for some countries: In Hungary, Poland and Romania, domestically owned banks have a significantly higher share of branches located more than 5 km



Chart 2

**Bank branches located more than 5 km from nearest bank branch, by bank ownership**

Source: OeNB CESEE bank branch data.

from the next branch of any bank. In turn, both in the Czech Republic and Albania, Austrian banks have a significantly higher share of branches in areas with low bank branch density than both other foreign-owned banks and domestic banks.<sup>16</sup> Thus, a look at the distances between bank branches suggests that there is no typical foreign bank location policy but that foreign banks' location policies differ between countries.

Table 2 and chart 2 depict the coverage and density of the overall bank branch network. However, while a certain region may be covered by a dense branch network, this network may be operated by no more than one or two large banks. In other words, banks may operate at a nationwide level or focus on certain regions. Table 3 indicates how branching policies (in terms of nationwide coverage) vary between banks. For example, in Bulgaria there are 259 villages or cities with at least one bank branch. While one bank has branches in just seven of these 259 villages or cities, which means it covers 2.7% of all "banked" villages or cities, another bank covers 230 villages or cities out of the 259 "banked" ones, i.e. 89.2%. On average, banks in Bulgaria cover 37.6% of all villages or cities that have at least one bank branch. The rate of bank coverage of such villages or cities varies significantly across countries, namely from 24% to 60%. Croatia has the lowest bank coverage rate, indicating that in Croatia banks tend to operate only in certain regions, whereas in Hungary – which records the highest rate – banks seem to follow a strategy of broader, nationwide operation. When we look at larger regions, i.e. NUTS 3, we find that the vast majority of banks tend to have at least one branch in every region (see online data supplement on the OeNB's website).

<sup>16</sup> Table A4 in the annex presents descriptive statistics on the area covered by buildings and roads – the so-called "urban fabric" – surrounding bank branches. These statistics confirm that the majority of bank branches in CESEE are located in urban areas and that there are significant differences between domestically owned, foreign-owned/non-Austrian-owned and Austrian-owned banks; these patterns are not uniform across countries, however.

Table 3

### Indicators of banks' geographic coverage within countries

#### Panel A. Distribution of banks' geographic coverage

	Minimum share of villages or cities covered by at least one bank	Mean share of villages or cities covered by banks	Maximum share of villages or cities covered by at least one bank
	%		
Bulgaria	2.7	37.6	89.2
Croatia	0.8	24.3	51.8
Czech Republic	1.5	44.0	96.3
Hungary	0.1	60.4	96.2
Poland	1.4	24.6	57.5
Romania	0.3	33.8	90.2
Albania	18.2	45.5	84.9
Bosnia and Herzegovina	4.9	36.4	70.7
FYR Macedonia	2.6	52.2	79.5
Serbia	0.5	29.0	56.2

#### Panel B. Differences in banks' geographic coverage by bank ownership

	Mean share of villages or cities covered by banks		
	Domestically owned	Foreign-owned/ non-Austrian-owned	Austrian-owned
	%		
Bulgaria	30.2	41.2	26.6
Croatia	7.8	31.6	24.9
Czech Republic	10.1	30.6	71.0
Hungary	80.4	6.1	6.2
Poland	35.4	11.1	6.5
Romania	60.9	18.3	22.1
Albania	29.0	35.8	84.9
Bosnia and Herzegovina	12.7	40.9	46.1
FYR Macedonia	57.1	48.2	48.7
Serbia	33.1	28.5	19.0

Source: OeNB CESEE bank branch data.

Note: We only count localities that have at least one bank branch, i.e. the total number of villages or cities recorded here excludes all villages or cities that do not have any banks.

Panel B of table 3 compares banks' "regional versus nationwide" branching policy, broken down by bank ownership. Similar to what we see in chart 2, there are significant differences between domestically and foreign-owned banks but these differences again vary across countries. While in Hungary, Romania and FYR Macedonia, at least one domestically owned bank is present in the majority of villages or cities with at least one bank branch, domestically owned banks are present only in every tenth "banked" village or city, on average, in Croatia, the Czech Republic, and in Bosnia and Herzegovina.

Table 4

#### Herfindahl index

	Domestically owned branches	Foreign/ non-Austrian-owned branches	Austrian-owned branches
	Mean		
Bulgaria	0.14	0.15	0.09
Croatia	0.24	0.25	0.22
Czech Republic	0.10	0.15	0.29
Hungary	0.63	0.23	0.22
Poland	0.41	0.13	0.10
Romania	0.38	0.13	0.13
Albania	0.16	0.16	0.29
Bosnia and Herzegovina	0.19	0.21	0.19
FYR Macedonia	0.15	0.14	0.13
Serbia	0.14	0.12	0.09

Source: Authors' calculations.

We take a closer look at the local market structure in the vicinity of foreign- and domestically owned branches by comparing bank concentration in the relevant local market. To this end, we compute an index that is similar to the widely used Herfindahl index of concentration. Under the rigid assumption that each bank branch serves an equal number of customers, we can calculate the market shares of each bank within a certain radius from every bank branch in the dataset:

$$H_{Branch} = \sum_{i=1}^{N_{Banks}} q_i^2$$

where  $N_{Banks}$  denotes the number of banks within 5 km from each bank branch and  $q_i = (\text{number of branches of bank } i \text{ within 5 km}) / (\text{number of all bank branches within 5 km})$ . The index can thus vary between values close to zero and one. If there are no other branches within 5 km of a specific bank branch, the index equals one. It also equals one if there are ten other bank branches but they all belong to the same bank. If, on the other hand, there are ten other bank branches and each one belongs to a different bank, the index is close to zero. Table 4 shows that the average concentration index is relatively low at 0.25. In Hungary, Poland and Romania, domestic banks tend to operate in markets that are more concentrated. This is in line with the results presented in chart 2, showing that domestic banks tend to locate in remoter regions. With the exception of the Czech Republic and Albania, Austrian-owned bank branches are located in less concentrated and likely more competitive markets.

### 3 Determinants of bank branch location

The descriptive statistics above show that the coverage, density and concentration of bank branch networks vary significantly within countries. What determines the location of bank branches? Are the determinants for branch location different for domestically owned banks and for foreign-owned banks? We analyze this problem more formally in a number of regression analyses. Specifically, we estimate OLS regressions with three alternative dependent variables, namely (1) the number of bank branches per capita, (2) the share of foreign bank branches, and (3) the share of Austrian bank branches. Our explanatory variables are informed by previous research and comprise indicators of demand for banking services and local economic activity: GDP per capita or, alternatively, stable night light following Henderson et al. (2012), population density, the number of enterprises per capita as well as the number of robberies per capita as a proxy for crime rates. In all regressions, we control for differences between countries, e.g. in terms of institutional quality, by including country fixed effects. As the explanatory variables are mainly observed at NUTS 3 level only, we aggregate the OeNB CESEE bank branch data to the NUTS 3 level, which yields 260 observations in total. The share of foreign banks in the total number of banks thus refers to the share of foreign banks per NUTS 3 region. Table A3 in the annex provides a detailed description of all variables and their respective sources. As we do not observe bank branch locations over time, regressions do not identify causal relationships but rather reflect correlations.

Table 5 presents the results of the regression in which branches per capita are the dependent variable and shows the overall determinants of bank branch location. We find that local economic activity as measured by GDP per capita, stable night lights or the number of enterprises per capita is correlated positively and significantly with the number of bank branches per capita. Specifically, a one-standard-deviation change in GDP per capita translates into a 0.62 absolute change in the number of bank branches per 10,000 adults. This effect is sizeable as the average number of bank branches per 10,000 adults across NUTS 3 regions is 2.5. The magnitude of the effect is similar when we employ the number of enterprises per capita as a proxy for local economic activity (table 5, column 2): A one-standard-deviation change in the number of enterprises per capita is associated with 0.62 more branches per 10,000 adults.<sup>17</sup> Data for GDP or enterprises per capita are not available for Serbia or for Bosnia and Herzegovina. In addition, for Bosnia and Herzegovina, there are no population data at the NUTS 3 level. Employing night lights as a proxy for GDP, we also find a significant positive correlation with the number of bank branches per capita (column 3): A one-standard-deviation change in night lights per capita is associated with 0.12 more branches per 10,000 adults. Population density is correlated negatively and significantly with the number of bank branches per capita. A one-standard-deviation change in population density is associated with a 0.23 decrease in the number of bank branches per 10,000 adults. Finally, we employ a proxy for security: the number of robberies per capita. This is negatively and significantly associated with the number of bank branches per capita.

Table 5

### Determinants of bank branch location

Dependent variable	log(bank branches per capita at NUTS 3 level)			
	(1)	(2)	(3)	(4)
log of GDP (at PPP) in euro per capita	0.567*** (0.069)	0.242** (0.094)		0.526*** (0.069)
log of population density	-0.089*** (0.027)	-0.146*** (0.045)		-0.048* (0.028)
log of enterprises per capita		0.541*** (0.088)		
log of night lights per capita			0.061** (0.03)	
log of number of robberies per capita				-0.048** (0.024)
Constant	-13.135*** (0.602)	-8.145*** (1.105)	-8.407*** (0.127)	-12.715*** (0.598)
Country fixed effects	Yes	Yes	Yes	Yes
Adjusted R-squared	0.56	0.65	0.36	0.38
Number of observations	198	137	230	178

Source: Authors' calculations.

Note: \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% level, respectively.

<sup>17</sup> The number of enterprises per capita is highly correlated with GDP per capita.

We check for the robustness of our results by reducing the sample to those regions where we observe all explanatory variables, re-estimating all regressions for the specification with the lowest number of observations (table 5, column 2). We also re-run regressions by lagging our explanatory variables, i.e. by using data on GDP per capita from 2012 to explain the share of bank branches in 2013. None of these modifications qualitatively change our results.

Turning to the differences in the location decision of foreign and domestic banks, table 6 shows that local economic activity and population density correlate positively and significantly with the share of foreign bank branches. A one-standard-deviation increase in GDP per capita (e.g. a change from EUR 9,930 to EUR 15,239 per capita at PPP) translates into a 6 percentage point rise in the share of foreign bank branches in the total number of branches. A one-standard-deviation increase in population density leads to a 7 percentage point increase in the share of foreign bank branches. Because the share of foreign branches in the total number of branches at NUTS 3 level is very high on average in some countries, we perform a robustness check by reducing the sample to those countries where there is a significant variation in the share of foreign branches (see the last three columns of table 6). This check shows that the results do not change qualitatively.

In a final step, we analyze the determinants of Austrian banks' branch locations. The overall picture is similar to that obtained in table 6. Local economic activity is positively correlated with the share of Austrian bank branches in the total number of branches. The magnitude of the effect of economic activity is smaller, however. A one-standard-deviation increase in GDP per capita leads to a 2 percentage point increase in the share of foreign bank branches in the total number of branches. Population density is not associated with the share of Austrian banks' branches in the total number of banks. Thus, Austrian banks, as other foreign banks, are mainly present in richer regions. However, foreign banks are also mainly present in more

Table 6

### Determinants of foreign bank branch location

Dependent variable	Share of foreign-owned bank branches in total number of bank branches at NUTS 3 level					
	All countries			Hungary, Poland, Romania, FYR Macedonia		
Sample						
log of GDP (at PPP) in euro per capita	0.090*** (0.026)	0.072* (0.039)		0.109*** (0.025)	0.140*** (0.043)	
log of population density	0.030*** (0.01)	0.008 (0.015)		0.044*** (0.009)	0.036* (0.02)	
log of enterprises per capita		0.047 (0.035)			0.006 (0.047)	
log of night lights per capita			0.046*** (0.011)			0.085*** (0.012)
Constant	-0.229 (0.226)	0.19 (0.461)	0.644*** (0.038)	-1.009*** (0.217)	-1.242** (0.502)	0.135*** (0.05)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.88	0.88	0.81	0.82	0.87	0.66
Number of observations	198	137	248	123	62	130

Source: Authors' calculations.

Note: \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% level, respectively.

Table 7

**Determinants of Austrian bank branch location**

Dependent variable	Share of Austrian-owned bank branches in total number of bank branches at NUTS 3 level					
	All countries			Hungary, Poland, Romania, FYR Macedonia		
Sample						
log of GDP (at PPP) in euro per capita	0.038** (0.016)	0.091*** (0.023)		0.024** (0.011)	0.058*** (0.02)	
log of population density	-0.01 (0.005)	-0.01 (0.009)		0.005 (0.004)	0.01 (0.011)	
log of enterprises per capita		-0.058** (0.023)			-0.039 (0.024)	
log of night lights per capita			0.007 (0.005)			0.012** (0.005)
Constant	-0.092 (0.133)	-0.783*** (0.253)	0.235*** (0.025)	-0.167* (0.095)	-0.630** (0.238)	0.083*** (0.017)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.86	0.79	0.86	0.92	0.8	0.93
Number of observations	198	137	248	123	62	130

Source: Authors' calculations.

Note: \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% level, respectively.

populated areas – and this does not apply for Austrian banks. This regression result is, therefore, in line with previous descriptive findings.<sup>18</sup>

#### 4 The banking landscape in CESEE from a household perspective

As we noted in the introduction, previous research has shown that the geographic distribution of bank branches and local banking market structure can have a substantial impact on households' financial inclusion and access to finance (Demirguc-Kunt et al. 2015; Ho and Ishii, 2011; Brown et al., 2015; Dick, 2006, 2008). To provide a first glimpse of whether this is also true for CESEE, we combine the OeNB CESEE bank branch data with the OeNB Euro Survey of CESEE households.<sup>19</sup> Interpreting the results requires some caution as results rely on the representativeness of the surveys with respect to the geographic distribution of the population, which cannot be validated. OeNB Euro Survey data are representative of the each country's population with regard to age, gender and regions, and the fact that we use a large number of households (about 6,000 per country) mitigates the caveat of finer-grained geographic representativeness.

Table 8 shows the percentage of households in CESEE that live within 1 km, 2 km or 5 km of the nearest bank. Again, to provide a comparison with a non-transition country, we also combine the data on Austrian bank branches with a representative survey of Austrian households. In Austria, 69% of households live

<sup>18</sup> The regression specifications in table 6 and table 7 were repeated with an estimator that accounts for the limited structure of the dependent variable (i.e. a fractional logit estimator). This had only minor implications on our results.

<sup>19</sup> The OeNB Euro Survey is a representative survey of CESEE households conducted by the OeNB since 2007. We employ data from 2012 to 2016, when we obtained the geographic coordinates of the primary sampling units, i.e. the coordinates of the respective streets in cities or villages or of the center of small villages. The reported distance thus refers to the distance between the address of the primary sampling unit and that of the nearest bank branch and not the actual address of respondents. However, this discrepancy should be rather small on average. For more information on the OeNB Euro Survey, see [www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html](http://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html).

Table 8

**Households' access to banks**

	Households that have a bank within		
	1 km	2 km	5 km
	%		
Bulgaria	69	75	82
Croatia	52	62	80
Czech Republic	58	66	81
Hungary	74	86	92
Poland	68	79	93
Romania	60	64	75
Albania	54	65	77
Bosnia and Herzegovina	49	56	73
FYR Macedonia	54	62	76
Serbia	67	76	86

Source: OeNB Euro Survey, CESEE bank branch data, unpublished data from a representative survey of Austrian residents.

within 1 km, 83% of households within 2 km and 98% of households within 5 km of the nearest bank. In CESEE, with the exception of Bosnia and Herzegovina, the majority of survey respondents has at least one bank branch within 1 km (table 8) from their home. On average across CESEE countries, 69% of households live within 2 km of the nearest bank branch.

It is striking, however, to see how the percentage of households that live within 5 km from the nearest bank varies between countries. While only 2% of survey respondents in Austria do not have a bank within 5 km, in Bosnia and Herzegovina, Romania, Albania and FYR Macedonia more than 20% of

households live more than 5 km away from the nearest bank branch. For some households in Albania and in Bosnia and Herzegovina, the nearest bank branch is even more than 40 km away. These differences between countries may partly reflect differences in population density.

There are many factors that may influence a household's decision to open a bank account or take out a loan, especially in CESEE, where the experience of previous economic and financial crises has led to a lack of trust in banks and a high cash preference (Stix, 2013). Nevertheless, table 9 provides some indication that the distance to the nearest bank and the likelihood of households having a bank

Table 9

**Local banking markets and households' financial inclusion**

	(a)	(b)	Null hypothesis: a=b	(c)	(d)	Null hypothesis: c=d
	Households without bank account	Households with a bank account		Households without loan	Households with a loan	
	Distance in km		p-value	Distance in km		p-value
Bulgaria	2.66	1.80	0.00	2.13	1.76	0.00
Croatia	3.17	2.56	0.01	2.61	2.61	0.99
Czech Republic	2.15	2.27	0.39	2.35	2.01	0.00
Hungary	1.51	1.23	0.00	1.27	1.35	0.22
Poland	1.84	1.33	0.00	1.49	1.22	0.00
Romania	3.35	2.01	0.00	2.87	2.21	0.00
Albania	3.35	2.60	0.00	3.02	2.82	0.27
Bosnia and Herzegovina	3.91	3.31	0.00	3.55	3.34	0.16
FYR Macedonia	3.82	2.46	0.00	2.93	2.02	0.00
Serbia	2.23	1.58	0.00	1.85	1.50	0.01

Source: OeNB Euro Survey and OeNB CESEE bank branch data.

Note: We define bank accounts as either current accounts, saving deposits or accounts with a debit or wage card. From OeNB Euro Survey data from 2011 to 2016, we find that the share of unbanked adults (respondents aged 14+) in the total population varies significantly between countries, coming to 26% in Bulgaria, 6% in Croatia, 5% in the Czech Republic, 23% in Hungary, 17% in Poland, 32% in Romania, 29% in Albania, 30% in Bosnia and Herzegovina, 20% in FYR Macedonia and 20% in Serbia. In Romania and Albania, the share of unbanked households decreased significantly after 2011, coming to 33% in 2016.

account or a loan are connected. On average across countries, households without a bank account live 2.8 km from the nearest bank while households with a bank account live 2.1 km from the nearest bank. Again, there is a strong variation across countries; with the exception of the Czech Republic, however, households with a bank account live significantly closer to the nearest bank branch than those without. Looking at loans, we find that the distance to the nearest bank branch does not differ significantly between those households that have and those that do not have a loan in Croatia, Hungary, Albania and in Bosnia and Herzegovina. For all other countries, households with a loan live significantly closer to the nearest bank branch than households that do not have a bank loan.

## 5 Conclusions

This paper discusses the geography of banking in ten Central, Eastern and South-eastern European (CESEE) countries using a novel dataset covering bank branch locations. In particular, we focus on two main aspects: first, on the provision of banking services, and second, on differences between domestic and foreign banks. Based on a descriptive account of the data used, our findings confirm – but also qualify – previous findings from the literature.

With regard to the supply of banking services, we find large regional differences between and within countries. A comparison with Austria as an example of a non-transition economy shows that large differences in banking services supply within countries are not specific to CESEE countries. Regressions show that these differences are strongly correlated with local economic activity and population density.

We look at the spatial distribution and concentration of banks' branch network from different angles and find highly consistent results regarding the branching behavior of both domestically owned and foreign-owned banks. Our regression results confirm that the share of foreign banks in total banks is higher in more economically active and more densely populated regions. However, this does not hold for the location of Austrian banks in CESEE, for which population density is not significant. This means that Austrian banks in CESEE locate also in more rural areas.

The fact that foreign banks have a high share in total banking assets in CESEE is well documented. Our spatial data confirm this fact, but also highlight strong differences between countries with regard to branch outreach. On average, in 7 out of 10 economies, foreign banks service more villages or cities than domestic banks. In 6 economies, domestic banks service less than 35% of “banked” villages or cities. Compared to other foreign banks, we find that Austrian banks operate branches in a very high share of “banked” villages or cities (i.e. they are present throughout the country) in the Czech Republic and in Albania. In Bosnia and Herzegovina, in FYR Macedonia and in Romania, Austrian banks are on average present in as many villages or cities as banks from other countries. The large dispersions observed across economies shows that there is no “one-size-fits-all” explanation for the geographic behavior of foreign banks in CESEE.

On the basis of our analysis, we cannot judge whether a certain branch density is optimal, we can only document what a specific branch density implies for households. Evidence from survey data shows that for almost all households in Austria the nearest bank branch is located within 5 km from the respective households, whereas this share is much lower in CESEE, coming e.g. to 73% in Bosnia and Herzegovina. However, this should not conceal the fact that for the majority of



CESEE households, the nearest bank can be found within 2 km. We provide some descriptive evidence that the geographic dispersion of banks influences the financial inclusion of households, i.e. households' decisions whether to have formal bank relations or not. In addition, local competition might affect households' financing conditions. Our paper is only one first step toward highlighting the importance of these interrelations, which should be analyzed in much more depth by future research.

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## Annex

Table A1

### OeNB CESEE bank branch data sources

Country	Source
Bulgaria	Hand-collected
Croatia	Hand-collected
Czech Republic	Hand-collected
Hungary	Magyar Nemzeti Bank
Poland	Hand-collected
Romania	Hand-collected
Albania	Bank of Albania
Bosnia and Herzegovina	Banking Agency of the Federation of Bosnia and Herzegovina, Banking Agency of Republika Srpska (headquarters only), hand-collected
FYR Macedonia	Hand-collected
Serbia	National Bank of Serbia

Source: Authors' compilation.

Table A2

**Comparison of OeNB CESEE bank branch data with external data sources**

	Total number of branches (OeNB)	Total number of branches (2017) <sup>1</sup> (SNL)	Total number of branches (ECB)	Number of commercial bank branches per 100,000 adults 2013 (GFDD)	Branches per 100,000 adults (OeNB)
Bulgaria	2,506	1,942	3,729	60.60	40.05
Czech Republic	1,148	1,787	2,135	24.34	31.28
Croatia	2,806	997	1,222	34.56	31.80
Hungary	2,718	1,127	3,247	15.44	32.15
Poland	10,432	7,605	15,479	32.98	32.22
Romania	5,207	3,632	5,492	31.43	30.90
Albania	460	311	..	23.70	19.70
Bosnia and Herzegovina	812	682	..	30.83	24.68
FYR Macedonia	413	331	..	24.27	24.10
Serbia	2,038	1,461	..	33.64	34.14

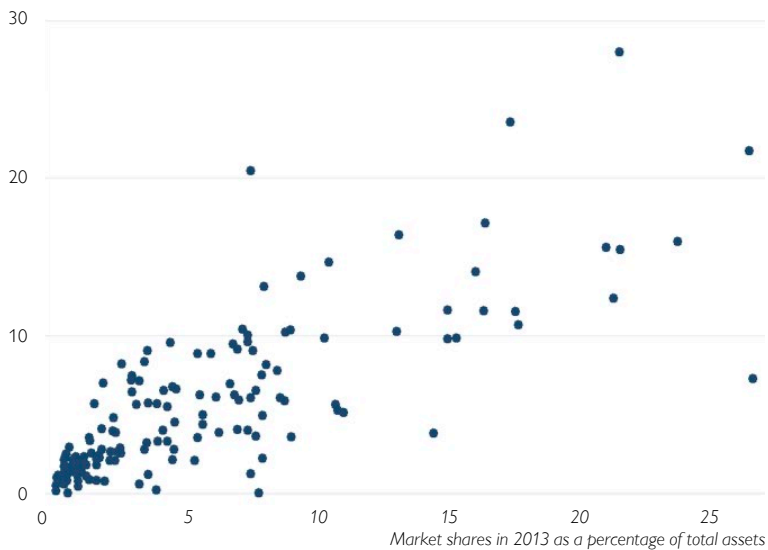
Source: OeNB CESEE bank branch data (OeNB); SNL Financial (SNL); ECB structural financial indicators (ECB); World Bank Global Financial Development Database (GFDD).

<sup>1</sup> Only includes SNL-covered companies for which specific branch location data are available.

Chart A1

**Banks' market shares measured by bank branches and total assets**

Market shares in 2013 as a percentage of total number of bank branches



Source: OeNB CESEE bank branch data, SNL Financial, national central banks.

Note: Dots represent individual banks.

Table A3

**Definition of variables and sources**

Variable	Definition	Sources
Branches	Represents the number of bank branches per capita by NUTS 3 region.	OeNB CESEE bank branch data
Banks	Represents the number of banks by NUTS 3 region.	OeNB CESEE bank branch data
Foreign share	Represents the share of foreign bank branches by NUTS 3 region.	OeNB CESEE bank branch data
Austrian share	Represents the share of Austrian bank branches by NUTS 3 region.	OeNB CESEE bank branch data
GDP	Represents gross domestic product (GDP) per capita by NUTS 3 region based on purchasing power parity (PPP) at current euro prices.	Information on GDP by NUTS 3 region was taken from the Eurostat database (see <a href="http://ec.europa.eu/eurostat/data/database">ec.europa.eu/eurostat/data/database</a> ). Since Eurostat provides GDP at the NUTS 3 level only at current market prices in EUR million, we had to compute PPP NUTS 3 level GDP per capita on our own. To do so, we first converted GDP provided by Eurostat to national currency units using end-of-period exchange rates provided by The Vienna Institute for International Economic Studies (wiiw). Second, we computed GDP converted into euro using PPP rates provided by the wiiw. Finally, we divided this indicator by the average annual population in the relevant country to get GDP per capita at PPP. Unfortunately, Eurostat does not provide GDP data for the NUTS 3 regions of Albania, Bosnia and Herzegovina, and Serbia. To the best of our knowledge, there exists no other database that provides GDP data for the NUTS 3 regions of Bosnia and Herzegovina and of Serbia. For Albania, however, GDP data by NUTS 3 region are provided by the Albanian Institute of Statistics (see <i>Regional Accounts in Albania 2013</i> , p. 31).
Night lights	Represents average stable night lights at NUTS 3 level.	National Center for Environmental Information, version 4, DMSP-OLS Nighttime Lights Time Series (see <a href="http://ngdc.noaa.gov/eog/dmsp/downloadV4composites.html">ngdc.noaa.gov/eog/dmsp/downloadV4composites.html</a> ). Authors' calculation for NUTS 3 level.
Population	Represents average annual population by NUTS 3 region.	Eurostat for Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania and FYR Macedonia. Statistical Office of the Republic of Serbia for Serbia (see <i>Statistical Yearbook</i> ). Note: The Statistical Office of the Republic of Serbia publishes population data only per June 30. We use this indicator as a proxy for average annual population. For Albania, average annual population data are provided by the Albanian Institute of Statistics (see <i>Regional Accounts in Albania 2013</i> , p. 36). According to the Agency for Statistics of Bosnia and Herzegovina, the NUTS classification in Bosnia and Herzegovina has not been completed yet. Hence, data on average annual population by NUTS 3 region is not yet available for Bosnia and Herzegovina.

Source: Authors' compilation.

**Definition of variables and sources**

Variable	Definition	Sources
Total area	Represents the total area of the NUTS 3 regions including inland waters expressed in km <sup>2</sup> .	Information on the total area of the NUTS 3 regions is provided by Eurostat for five out of the ten countries under observation (Bulgaria, the Czech Republic, Hungary, Poland, Romania). For Serbia, data on the total area by NUTS 3 region are provided by the Statistical Office of the Republic of Serbia (see Statistical Yearbook). For Albania, data on the total area by NUTS 3 region is provided by the Albanian Institute of Statistics (see Regional Accounts in Albania 2013, p. 25). Since this information is only available for 2013, we assume that the area of the NUTS 3 regions did not change over time and will thus consider the same values for the years 2010 to 2015. This should be kept in mind when using the information on total areas for computing the population density for different years. Information on total areas is not available for Croatia, Bosnia and Herzegovina, and for FYR Macedonia.
Land area	Represents the total land area of the region, excluding inland waters expressed in km <sup>2</sup> .	Information on land area is provided by Eurostat for seven out of the ten countries under observation (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania and FYR Macedonia). Information on land area is not available for Albania, Bosnia and Herzegovina, and Serbia.
Population density	Represents the population density by NUTS 3 region. Population density was computed by dividing average annual population by total area. If total area was not available for a NUTS 3 region, we used land area as a proxy for total area instead.	Authors' calculations based on the above sources.
Enterprises	Represents the total population of active enterprises by NUTS 3 region divided by the average annual population by NUTS 3 region. Total population of active enterprises includes industry, construction and services except insurance activities of holding companies (Statistical classification of economic activities in the European Community, revised classification – NACE Rev. 2).	Information on enterprises by NUTS 3 region is provided by Eurostat for six out of the ten countries under observation (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania). For Albania, data on the average annual population is provided by the Albanian Institute of Statistics (see Statistical Database). Information on enterprises is not available for Bosnia and Herzegovina, FYR Macedonia and Serbia.
Robbery	Represents the number of robberies at NUTS 3 level per year. Robbery is defined as stealing from a person with force or threat of force, including muggings (bag-snatching) and theft with violence. Pick-pocketing, extortion and blackmailing are generally not included.	Information on robbery by NUTS 3 region is provided by Eurostat for six out of the ten countries under observation (Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania). Information on robbery is not available for Albania, Bosnia and Herzegovina, FYR Macedonia and Serbia.
Urban fabric	Represents the area covered by continuous urban fabric (buildings, roads and artificially surfaced area cover almost all the ground; nonlinear areas of vegetation and bare soil are exceptional) and discontinuous urban fabric (most of the land is covered by structures; buildings, roads and artificially surfaced areas associated with vegetated areas and bare soil, which occupy discontinuous but significant surfaces) within a radius of 1 km, 2 km, 5 km, 10 km and 20 km, respectively, of each bank branch.	CORINE Land Cover; authors' calculation.

Source: Authors' compilation.

Table A4

**Differences in “urban fabric” surrounding bank branches, by bank ownership**

	Area covered by urban fabric in a radius of 1 km around bank branch					
	Domestically owned branches	Foreign/non-Austrian-owned branches	Austrian-owned branches	Null hypothesis: domestic=foreign/non-Austrian	Null hypothesis: foreign/non-Austrian=Austrian	
	<i>km<sup>2</sup></i>			<i>p-value</i>		
Bulgaria	2.08	2.08	2.18	0.99		0.12
Croatia	1.81	1.71	1.89	0.10		0.00
Czech Republic	2.15	1.93	1.74	0.00		0.00
Hungary	1.65	2.32	2.35	0.00		0.54
Poland	1.63	2.26	2.35	0.00		0.02
Romania	1.84	2.21	2.12	0.00		0.00
Albania	2.44	2.30	2.01	0.26		0.01
Bosnia and Herzegovina	1.67	1.86	1.75	0.08		0.10
FYR Macedonia	2.17	2.29	2.26	0.01		0.85
Serbia	1.99	2.22	2.30	0.09		0.16

Source: OeNB CESEE bank branch data, CORINE, authors' calculations.

Note: For a definition of urban fabric, see table A3. The total area  $A$  around a bank branch is  $A=r^2*\pi\approx 3.14$  km<sup>2</sup>. We can see, for example, that urban fabric covers between 52% (Poland) and 78% (Albania) of the total area  $A$  surrounding domestically-owned bank branches.