

Homeownership and housing finance patterns one generation after the fall of communism

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Drawing on a recent wave of the OeNB Euro Survey, we document current homeownership patterns across ten countries in Central, Eastern and Southeastern Europe (CESEE-10), the demographic characteristics of homeowners and the connections between their housing assets and the household credit market. Due to the experience of Central, Eastern and Southeastern Europe (CESEE) with both communism and postcommunist privatization reforms, homeownership rates in the CESEE countries are among the highest in Europe. However, the demographic characteristics of homeowners we observe in the CESEE-10 now largely resemble those observed in more mature market settings. Despite high homeownership rates, the percentage of CESEE-10 households with housing loans is relatively small and homeowners infrequently use their dwellings to secure housing loans. However, we find that homeowners do use real estate as collateral for loans that are not used to finance house purchases.

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In Central, Eastern and Southeastern Europe (CESEE), three decades have passed since the disappearance of communist economic systems and, with them, the primacy they attached to nonprivate forms of asset ownership. The transformation of property rights that accompanied the transition from central planning to market economies was widely regarded as essential to the region's development and integration into the broader European and global economies, with the privatization of state-owned enterprises and the growth of a non-state greenfield sector drawing most of the attention (Brada, 1996; Estrin et al., 2009). The expansion of private ownership, however, extended beyond the assets of firms. Notably, millions of people became first-time homeowners, vaulting the CESEE countries into the ranks of countries with the highest homeownership rates in the world. Now, one generation after the fall of communism, we use a recent ten-country survey of individuals to document current homeownership patterns in CESEE, the demographic characteristics of homeowners and the connections between their housing assets and the household credit market. Because of the region's historical experience with both communism and postcommunist reforms, it is by no means self-evident that the homeownership patterns we observe will mirror those observed elsewhere in the world. Our evidence, nevertheless, does suggest that the demographic characteristics of homeowners in CESEE now largely resemble those observed in more mature market settings in OECD countries; CESEE mortgage markets, however, remain relatively small.²

Still, the aspect of privatization that most directly affected people in CESEE – homeownership – arguably has received relatively little attention in the literature

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² Throughout the paper, we will use the following definitions: A "housing loan" is a loan that is used to finance the purchase of residential real estate. A "mortgage" is a loan used to finance the purchase of residential real estate that is collateralized by the household's main residence or by any other real estate property owned by the household.

addressing the tectonic shifts that have shaped CESEE over the past generation.³ This comes as a surprise, perhaps, given how homeownership has been linked, in other contexts, to a variety of behaviors and outcomes at both the household and community level. Green and White (1997) and Haurin et al. (2002), for example, tie homeownership to better cognitive and educational outcomes for resident children.⁴ Homeowners themselves report higher levels of life satisfaction (Rohe and Basolo, 1997; Rohe and Stegman, 1994; Rossi and Weber, 1996) and exhibit lower rates of psychological distress (Cairney and Boyle, 2004). Some studies have also hypothesized that housing assets, by serving as a source of collateral, ease access to bank loans and thereby expand entrepreneurial opportunities as well as consumption (de Soto, 2000; Schmalz et al., 2017).

Di Pasquale and Glaeser (1999) present evidence that homeownership promotes civic engagement.⁵ Galster (1983) and Harding et al. (2000) demonstrate that owner-occupied dwellings are better maintained, which likely generates positive local externalities (Rossi-Hansberg et al., 2010). Reduced labor mobility is a frequently cited negative consequence of homeownership (Andrews and Sanchez, 2011; Oswald, 1996). Coulson and Fisher (2009), for instance, find that homeowners have lower wages than renters and that higher regional homeownership rates are associated with a greater probability of individual unemployment. Munch et al. (2008), via the “Oswald conjecture,” find that homeownership decreases mobility in terms of transitions into both new local jobs and jobs outside the local labor market. In CESEE, Broulikova et al. (2018) find some support for the proposition that homeowners are less likely to move in search of employment but no evidence that their actual unemployment rates exceed those of renters.

Considering the potential connections between homeownership and this diverse and noteworthy set of outcomes, we see value in exploring the demographic characteristics of homeowners in a manner new to the literature on CESEE. In our paper, we try to find out, for example, whether homeowners rather tend to be young or old, rich or poor, and/or whether they rather live in urban or rural areas. CESEE’s unique history, after all, may have produced a set of connections between the above sociodemographic characteristics and homeownership that differ considerably from patterns observed in OECD countries (Andrews and Sanchez, 2011; Arrondel et al., 2014; Goodman and Mayer, 2018). As recently as in the late 1980s, there was no formal private housing market to speak of in CESEE and the rental housing stock was entirely publicly owned (Broulikova and Montag, 2019).⁶ Because of shortages and/or subpar quality in the public sector, residents throughout CESEE could and did build and own houses independently, however. Thus, a significant part of the region’s housing stock was held privately; in the 1980s, only roughly 30% were formally owned by the state. To ensure that this figure does not create a false impression of the importance and endurance of private tenure rights in the communist system, we add two important caveats. First, prior to 1989, the

³ Broulikova and Montag (2019) synthesize and systematize much of the existing evidence on housing market reforms in postcommunist countries, describing the research to date as “fragmented and often quite dated.”

⁴ Barker and Miller (2009) and Bourassa et al. (2016) cast doubt on this relationship.

⁵ Engelhardt et al. (2010) cast doubt on this relationship.

⁶ Slovenia, which at the time was part of Yugoslavia, tolerated a second-hand housing market (Broulikova and Montag, 2019).

de facto distinction between private and public apartments, in terms of residents' rights, may have been "devoid of economic content" (Gebhardt, 2013). Second, at the end of the communist era, cooperatives, a tenure form distinct from private ownership, represented a nontrivial portion of the housing stock throughout much of CESEE.

Privatization of state-owned housing began soon after the fall of communism. In CESEE, roughly one-third of the public housing stock was privatized by 1995 (Hegedüs et al., 1996b) and most countries in CESEE had almost completed the process by the early 2000s. Hungary, for example, entered the postcommunist era with about one-quarter of its rental housing stock in public ownership; about 80% of it was privatized by 2003. Prior to privatization, 35% of Poland's rental units were publicly owned and 25% of dwellings were in housing cooperatives; most of the privatization was completed by 2002. The Czech Republic lagged other countries in CESEE, with only half of its public housing stock having been privatized by 2002 (Lux, 2003); prior to privatization, 38% of its rental units were publicly owned and 18% of dwellings were in housing cooperatives. Further to the south and throughout the Balkans, state ownership of housing was generally less common during the communist era. In Bulgaria, for example, where tenants could acquire their homes after just two years of tenancy, homeownership rates already stood at 86% in 1988 (Broulikova and Montag, 2019).

Although there were some exceptions, tenants of state-owned apartments were generally granted first rights to acquire these apartments as private property at "giveaway" prices in the 1990s (Broulikova and Montag, 2019). In Hungary and Poland, for example, the discount tenants were granted could be 80% or more of the assessed value, and in Slovenia and Slovakia, discounts ranged from 30% to 80% (Lux, 2003; Sendi, 1995; Skiba, 2005). The assessed value reflected, at least partially, the low quality of the housing stock (Pichler-Milanović, 1999).⁷ In addition to steeply discounted sale prices, privatization was facilitated in some countries by publicly subsidized low-interest, long-term loans (Hegedüs et al., 1996a; Lux, 2003).⁸

In the following, we discuss the ownership patterns that have emerged in CESEE in the aftermath of the postcommunist privatization push and subsequent developments affecting the region's housing stock. Section 1 describes our unique micro-level dataset, which is derived from the OeNB Euro Survey – a repeated cross-sectional survey that is conducted by the Oesterreichische Nationalbank (OeNB) in ten CESEE countries (CESEE-10) whose legal tender is not the euro. Section 2 documents homeownership rates across the CESEE-10 and compares them with rates found elsewhere in Europe. It also describes variations in homeownership rates within individual countries, across different types of dwellings (houses and apartments), and among different subgroups of the population. Section 3 employs a regression analysis to further identify the household characteristics that correlate with homeownership and then compares these with the ones observed in more mature market settings. Section 4 lays out the connection between housing assets and the household credit market, documenting, among other findings, that a surprisingly large share of real estate loans in the CESEE-10 is not secured. Section 5 presents our conclusions.

⁷ *The quality of a privatized home might influence the owner's decision to keep, sell or rent it. In addition, selling and renting was not easy at the early stages of privatization because the real estate market needed time to evolve (Pichler-Milanović, 1999).*

⁸ *Throughout much of CESEE, national and/or central governments determined the pace and scope of privatization. In the Czech Republic, control over the privatization of public housing was devolved to the municipalities.*

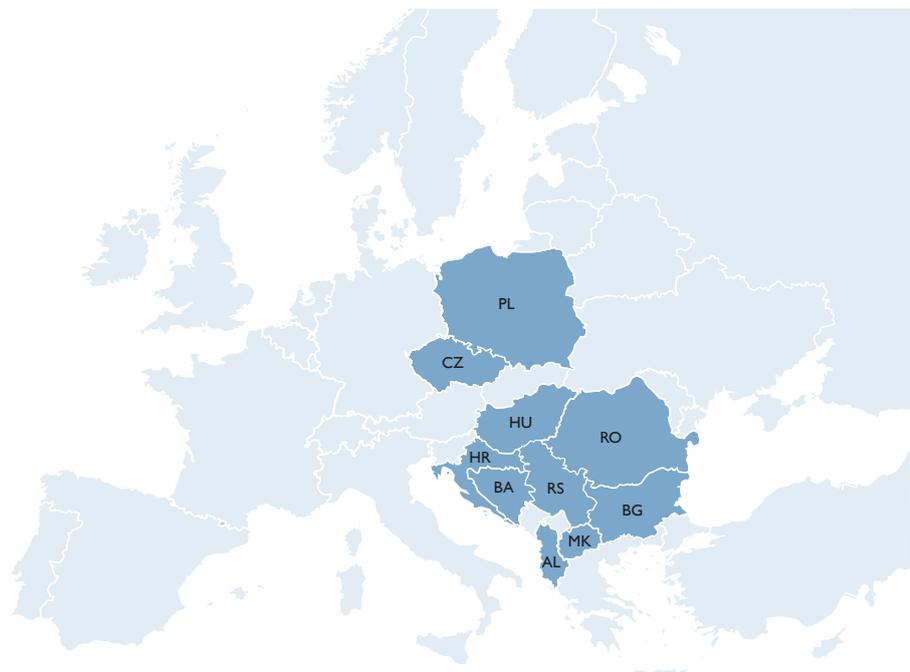
1 Data

We draw on a recent wave of the OeNB Euro Survey, which has been implemented on a regular basis since 2007 as a repeated cross-sectional survey in ten CESEE countries. As shown in figure 1, the OeNB Euro Survey covers six EU Member States which are not part of the euro area (Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania) and four (potential) EU candidate countries (Albania, Bosnia and Herzegovina, North Macedonia, and Serbia). As members of the euro area, Slovenia and Slovakia are not included in the survey. In each country and in each survey wave, a nationally representative sample of 1,000 individuals aged 15 years or older is interviewed based on multistage random sampling procedures. Data weighting is used to ensure a nationally representative sample for each country; sampling weights use population statistics on gender, age and region and, where available, education and socioeconomic status as well as ethnicity.⁹

We specifically employ data from the fall 2017 survey wave, which, in addition to the core questionnaire, included questions about the owner and type of the respondent's dwelling, the method by which homeowners assumed homeownership, loans used to finance home purchases, and housing assets pledged as collateral to secure loans. These micro-level data allow for the most comprehensive assessments of homeownership and housing loan lending patterns in the CESEE-10 to date.

Figure 1

Countries included in the OeNB Euro Survey



Source: Authors' illustration.

Note: The OeNB Euro Survey covers ten CESEE countries (CESEE-10): Albania (AL), Bosnia and Herzegovina (BA), Bulgaria (BG), the Czech Republic (CZ), Croatia (HR), Hungary (HU), North Macedonia (MK), Poland (PL), Romania (RO), and Serbia (RS). Note that Slovakia and Slovenia are not included in the OeNB Euro Survey as they both have the euro as legal tender.

⁹ For more information on the OeNB Euro Survey, see www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html.

We draw our measure of homeownership from a survey question about respondents' main residence, which is defined as the "house or apartment where your household lives most of the year." Response options included "I own it myself," "my partner owns [it]," "I own it jointly with my partner," "I own it with someone else," and "somebody other than myself or my partner in this household [owns it]." Positive responses to any of these options were interpreted as meaning that the residence was owned privately by its occupants. This designation is the basis for our subsequent analysis of homeownership patterns in CESEE. Other responses, which were interpreted as an absence of homeownership, were "another individual (not related to persons in this household/not a family member)," "a company (that is not the employer of any household member)," "[the] employer of one of the household members," "a public institution or government," "a cooperative" or "other."

The survey also elicited information about the types of dwelling. For our purposes, we define detached and semidetached houses as well as farms as "houses" as opposed to "apartments." In the survey, homeowners, be they owners of houses or apartments, were asked how they had come by their homeownership: through privatization, restitution, inheritance (or gift), purchase or by building their home themselves. All survey participants were asked about the largest outstanding loan which they had taken on either personally or, if in a relationship, jointly with their partner. Information was collected on the loan's purpose and terms, including information on whether, and how, it was secured.¹⁰ The core section of the OeNB Euro Survey also provided demographic information on the respondents as well as their household: age, educational attainment, household income, household composition (i.e. number of adults and children) and location.

2 Descriptive results

2.1 Homeownership in CESEE

In table 1, we present estimates of homeownership rates based on representative samples of around 1,000 individuals in each of the CESEE-10. As noted above, homeownership refers to the respondents' residence being owned by them and/or their partner and/or another individual who lives in said home. Under this definition, the homeownership rate for the CESEE-10 is 82.8%, with all but two countries posting homeownership rates between 79% and 90%. Albania's 94.6% and the Czech Republic's 59.1% represent the extremes. In general, these estimates closely resemble Eurostat's contemporaneous estimates for the CESEE-10.¹¹

In general, CESEE homeownership rates are extremely high. Austria, Germany and Switzerland e.g. were estimated to have homeownership rates of 55%, 51.4% and 41.3%, respectively, in 2017, and for the EU as a whole, the analogous figure

¹⁰ Drawing on the questions used in the 2017 survey wave, we were able to identify respondents who own a house and are currently paying off a loan for this house. We do not know what percentage of households own a house that was financed by a mortgage that has already been paid off. In 2014, data were collected on what percentage of households owned a house financed by a mortgage: 6.6% of respondents who owned a house in 2014 said that they had purchased it with a mortgage that had since been paid off.

¹¹ Eurostat's estimates for homeownership are based on the European Union Statistics on Income and Living Conditions (EU-SILC) survey, whose questions and response options on homeownership vary across countries. OeNB Euro Survey questions – the basis for our estimates – are consistent across countries. The discrepancy between the two survey estimates for the Czech Republic and Poland may, in part, be a function of the differential treatment of housing cooperatives; in these two countries, the EU-SILC surveys consider cooperatives as owner-occupied dwellings. Additionally, we should note that the EU-SILC survey samples households; the OeNB Euro Survey, by contrast, samples individuals.

Table 1

Homeownership rates in the CESEE-10 in 2017

	Homeowners		Outright homeowners		Number of observations
	Eurostat EU-SILC	OeNB Euro Survey	Eurostat EU-SILC	OeNB Euro Survey	OeNB Euro Survey
	%				
Albania	n.a.	94.6	n.a.	83.9	1,000
Bosnia and Herzegovina	n.a.	85.8	n.a.	79.0	967
North Macedonia	88.7	88.8	88.0	81.6	988
Bulgaria	82.9	85.5	80.0	77.4	1,009
Croatia	90.5	82.3	83.6	66.9	1,005
Poland	84.2	79.0	73.1	66.6	968
Romania	96.8	89.7	95.7	83.4	1,049
Serbia	82.0	81.5	81.0	78.5	1,006
Czech Republic	78.5	59.1	57.8	45.7	995
Hungary	85.2	81.7	69.3	70.1	990
Total	n.a.	82.8	n.a.	73.4	9,977
EU-28	69.3	n.a.	42.8	n.a.	n.a.

Source: OeNB Euro Survey, fall 2017 (weighted data); Eurostat EU-SILC.

Note: The authors' definition of (outright) homeowners is not fully comparable to the Eurostat definition (see annex, table A1). If, in the OeNB Euro Survey, the respondent refused to answer the question on homeownership or answered „do not know," the observation was not taken into account; n.a. = not available; Countries are listed in OeNB Euro Survey order.

was 69.3%.¹² Similarly, in 2015, in Canada, Japan, Mexico and the United States, homeownership rates were 67%, 64.9%, 71.7% and 63.7%, respectively (Goodman and Mayer, 2018). A survey of 17 Latin American countries found only one with a homeownership rate exceeding 80% (Gandelman, 2009).

Table 1 also presents our estimates for “outright homeownership,” referencing homeowners who are neither paying back a loan on their main residence nor using that residence as collateral to secure another loan.¹³ With an outright homeownership rate of 73.4% and an overall homeownership rate of 82.8% in the CESEE-10, only 9.4% of dwellings in the CESEE-10 are owned privately but not outright. The comparable figures for the EU-28 are quite different. Specifically, according to Eurostat estimates for 2017, 42.8% of dwellings in the EU-28 are owned outright, whereas 26.5% are owned by residents still paying off a housing loan.¹⁴ In other words, in the EU-28, dwellings owned outright outnumber those that are owned privately but not outright – but only by a factor of 1.6. In the CESEE-10, the

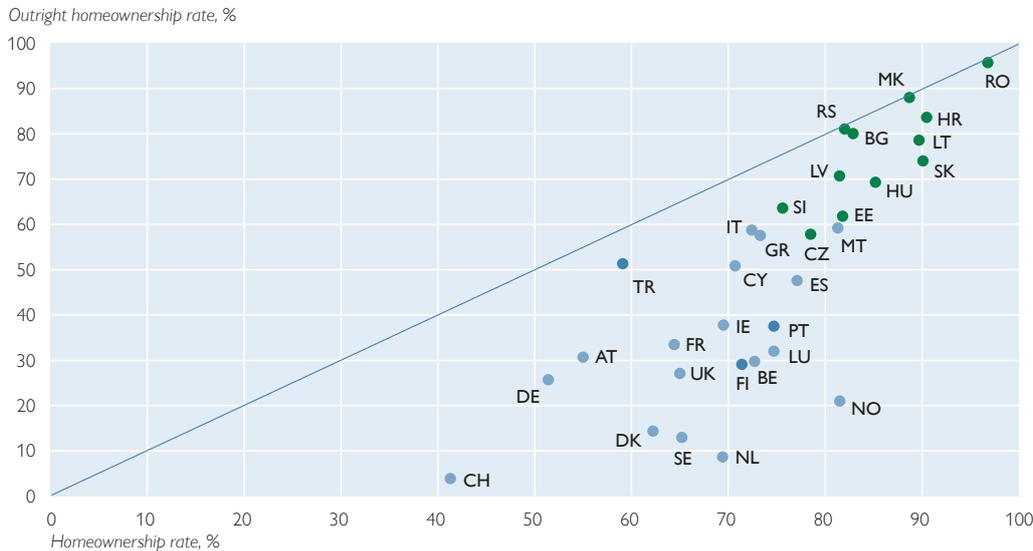
¹² These data can be accessed at http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvh02&lang=en.

¹³ If relevant information as to the purpose of the loan or the usage of collateral was missing, a respondent was classified as a non-outright homeowner. By doing so, we likely underestimate the outright homeownership rate. In the OeNB Euro Survey, information on the purpose and potential collateral of a loan is only available for a respondent's “largest, most important loan.” For respondents who reported that their largest, most important loan refers to a nonhousing loan, we assumed that the respondent is currently not paying off a housing loan. It is thus possible that we mistakenly classify respondents as outright homeowners if they are still paying back a loan on their main residence, while the purpose of their largest, most important loan is different from financing their main residence.

¹⁴ Eurostat's definition of “outright ownership” (see <https://ec.europa.eu/eurostat/documents/1012329/8658951/Household+data+-+housing.pdf/6c5216f2-b40b-49d6-a0aa-9c2c4bb32348>) differs slightly from ours. Moreover, Eurostat's measure of outright ownership does not consider the possibility that a respondent's dwelling might have been pledged to secure a loan whose purpose is to finance something other than the purchase of that dwelling.

Chart 1

Relationship between homeownership rates and outright homeownership rates



Source: Eurostat EU-SILC (http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lwho02&lang=en).
 Note: Green dots represent postcommunist countries; blue dots represent non-postcommunist countries.

former group outnumbered the latter by a factor of 7.8. These differences likely reflect the different levels of development of housing finance across the CESEE-10 and the EU as a whole.

The high homeownership rates in CESEE in general, rather than being a function of robust household credit markets, are characteristic of the region’s unique history. The region’s postcommunist experience with markets for both the renting of residential real estate and transfers of homeownership has been too short to create homeownership patterns that no longer bear the traces of this unique history. Chart 1 helps illustrate this particularity. The horizontal and vertical axes, respectively, plot country-level homeownership and outright homeownership rates. Since the latter is a subset of the former, countries only appear on, or below, the 45-degree line, with their distance from this line relative to their distance to the horizontal axis a rough proxy for the level of development of national housing loan markets. The postcommunist countries (i.e. the green dots in chart 1) monitored by Eurostat, which include the Baltic countries, have both high homeownership and high outright homeownership rates and are thus clustered on the right-hand side of the scatterplot and relatively close to the 45-degree line. The non-postcommunist countries (i.e. the blue dots in chart 1) almost all have lower homeownership rates and a greater share of homeowners paying off housing loans. Providing evidence, perhaps, of their developing housing loan and rental markets, the postcommunist countries most clearly deviating from the characteristic “high homeownership and high outright homeownership” pattern are those eight that were the first to join the EU in 2004: Slovenia, the Czech Republic, Estonia and, to a slightly lesser extent, Poland, Hungary, Latvia, Slovakia and Lithuania. The countries of Southeastern Europe differ most from the euro area countries in this respect.

2.2 Variation across regions and sociodemographic groups

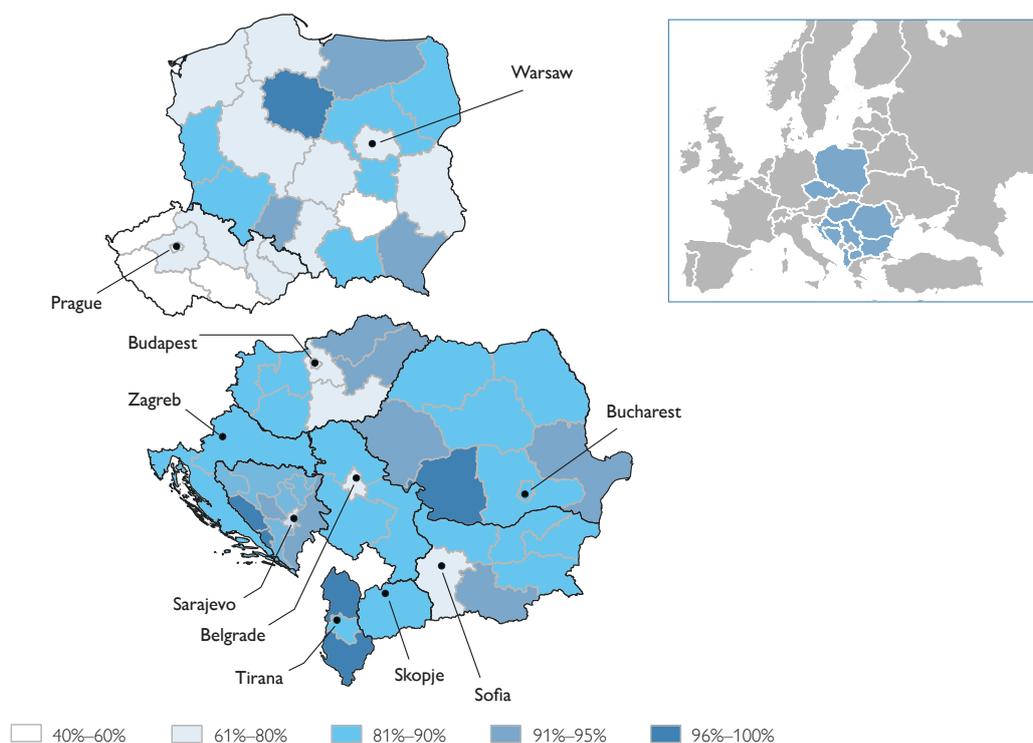
Within the CESEE-10 countries, homeownership rates vary by region, by type of dwelling and by age cohort and income group. Figure 2 presents a map depicting intracountry variation. Poland displays the highest intracountry variation in average ownership rates of all the countries surveyed.¹⁵ The presumably more urbanized regions in which national capitals are located have relatively lower rates of homeownership.

Table 2 shows, perhaps not surprisingly, that in each country, homeownership rates for people living in houses are higher than for people living in apartments.

Mimicking patterns observed elsewhere in the world, chart 2 demonstrates that homeownership rates, in general, climb both with age and income (Andrews and Sanchez, 2011; Goodman and Mayer, 2018).¹⁶ The average homeownership rate for the 25–34 years cohort is 73.2%, whereas that for the 55–64 years cohort

Figure 2

Intracountry variation of homeownership rates



Source: OeNB Euro Survey, fall 2017.

Note: Homeownership rates at the NUTS 2 level; for Bosnia and Herzegovina, homeownership rates are shown according to the OeNB's regional classification scheme. Statistics are based on weighted data.

¹⁵ Specifically, the standard deviation of regional means is highest for Poland, a finding that holds for NUTS 2 and NUTS 3 as well as for the OeNB's regional classification scheme.

¹⁶ We observe the monotonic relationship between the age of the respondents and homeownership even though the homeownership rates of the youngest cohorts are inflated given how we link demographic characteristics, such as age, to homeownership. Since the OeNB samples individuals but attributes homeownership to any resident living in the residence, some of the respondents are adult children living with parents (or older relatives) who may be the formal homeowners. If we were to restrict our definition of homeownership exclusively to responses of "I own it myself" or "my partner owns [it]," we would see an even steeper relationship between age and homeownership than that presented in chart 2. Note that for some subgroups, sample sizes are small.

is 89.8%. In every country except in the Czech Republic and North Macedonia, the cohort with the highest homeownership rates is the oldest, i.e. the over-65-year-olds. Poland and the Czech Republic, in fact, are the only two countries in which the oldest cohort has a homeownership rate of under 90%. Moreover, these two countries and Hungary are the only ones that have a sub-90% homeownership rate for the 55–64 years cohort.

The relationship between household income and homeownership is upward sloping in most countries but is generally flatter than might be expected.¹⁷ In fact, in several countries (Bulgaria, Croatia and Romania), the poorest tertile records the highest rate of homeownership. Only in the Czech Republic

Table 2

Homeownership rates by type of dwelling

	(a) Houses	(b) Apartments	Difference between (a) and (b)	Number of observations
	%			
Albania	97.8	90.5	7.3	1,000
Bosnia and Herzegovina	88.9	73.3	15.6	956
North Macedonia	89.6	84.9	4.6	987
Bulgaria	92.0	80.3	11.7	1,009
Croatia	85.7	71.4	14.3	988
Poland	83.9	74.8	9.1	968
Romania	91.2	86.8	4.4	1,029
Serbia	87.2	70.4	16.8	1,004
Czech Republic	81.2	43.4	37.8	992
Hungary	85.0	73.4	11.7	989
Total	88.4	73.5	14.9	9,922

Source: OeNB Euro Survey, fall 2017.

Note: All statistics are weighted. The category "houses" comprises detached and semidetached houses as well as farms. Respondents who live in any other type of dwelling (less than 1% of the overall sample) are not taken into account. Also, respondents who did not answer the question or who answered "do not know" are not considered. Countries are listed in OeNB Euro Survey order.

Chart 2

Homeownership rates

Broken down by age groups



Source: OeNB Euro Survey, fall 2017.

Note: Statistics are based on weighted data.

Broken down by income



¹⁷ In the OeNB Euro Survey, respondents were asked to report their total monthly household income after taxes. Respondents were presented a list of different income categories out of which they had to choose the one that best described their monthly net household income. For each country, we then collapsed these categories into three broader income categories (low, medium, high) such that each of the categories contained roughly one-third of the country's respondents. Overall, 22% of respondents refused to state their income. We account for this by including a dummy variable in the regressions.

Table 3

Mode of obtaining ownership of main residence

	Obtained through privatization or restitution	Inherited	Purchased	Built	Other	Number of observations
	%					
Albania	18.0	9.0	43.5	27.9	1.5	938
Bosnia and Herzegovina	0.9	29.9	19.4	48.2	1.6	803
North Macedonia	1.4	44.9	19.9	29.8	4.0	856
Bulgaria	8.3	41.8	26.4	16.4	7.1	825
Croatia	9.8	35.2	28.4	25.0	1.6	805
Poland	1.6	23.4	40.5	27.1	7.3	746
Romania	5.0	26.6	47.8	15.8	4.8	912
Serbia	3.6	35.9	26.7	31.0	2.8	793
Czech Republic	8.8	25.2	41.3	20.5	4.2	582
Hungary	2.4	25.1	58.4	13.8	0.3	798
Total	6.1	29.6	35.2	25.6	3.5	8,058

Source: OeNB Euro Survey, fall 2017.

Note: All statistics are weighted. The table shows how homeowners obtained ownership of their main residence. If homeowners refused to answer the corresponding question or answered "do not know," the observation was not taken into account. Countries are listed in OeNB Euro Survey order.

do we observe a steep, upward-sloping relationship between income category and homeownership.

Table 3 shows how homeowners assumed ownership of their main residence. There is substantial cross-country variation but, on balance, we observe large numbers reporting that they have either built their main residence (25.6%), purchased it (35.2%) or inherited it (29.6%). Relatively few respondents, namely just 6.1%, report that they became owners of their homes through privatization or restitution. The small numbers in this group may appear surprising given the magnitude of the housing privatization programs carried out in CESEE in the 1990s and early 2000s. Of course, some of the respondents may respond that they purchased their home when in fact they bought it at a discounted price under a privatization program, because real estate markets hardly existed in the initial transition period. We believe, however, that what we observed in 2017 reflects the inevitable turnover in the ownership of properties that were initially privatized around 25 years earlier. Some of this privatized housing can be assumed to have been re-sold by the initial postcommunist owners and some has probably been passed on as inheritance. To illustrate these dynamics, we consider evidence from the second wave of the Life in Transition Survey (LiTS) implemented by the European Bank for Reconstruction and Development (EBRD). To our knowledge, these LiTS data are the only other comprehensive source of data on the region that address the question of how respondents acquired their homes. This is illustrated by the example of two LiTS countries: In Poland and Romania, 9% and 7% of homeowners, respectively, reported that they had become homeowners directly because of the privatization reforms (Broulikova et al., 2018). The above LiTS data were collected in 2010. The corresponding figures from the 2017 OeNB Euro Survey are 1.6% and 5%, respectively, for Polish and Romanian homeowners. Clearly, with the passage of time, progressively fewer individuals report having benefited directly from the postcommunist privatization programs.

3 Determinants of homeownership

3.1 Empirical model

In this section, we extend the exploration of homeownership in the CESEE-10 provided in section 2 by performing a regression analysis. Our intent is to lay out patterns of correlation that can then be compared to those of other regions. Specifically, our approach is designed to mirror that of Goodman and Mayer (2018) and Andrews and Sanchez (2011), who employ similar regressions to identify patterns in the United States and selected OECD countries (Austria, Australia, Canada, Denmark, Finland, Germany, Italy, Luxembourg, Spain, Switzerland and the United Kingdom), respectively.¹⁸ To our knowledge, our data allow us to carry out the most comprehensive exercise of this kind for the CESEE region so far.

As shown in equation (1), we employ a probit regression framework to model the probability of homeownership. Using country fixed effects, we run the model, first, for all ten CESEE countries in the OeNB Euro Survey and then, separately, for the subsets of EU members and nonmembers (i.e. the Western Balkan countries).

$$P(\text{Homeowner} = 1) = \Phi(x\beta + u) \quad (1)$$

Our dependent variable is the same binary measure we used in section 2 to build up estimates of aggregate homeownership rates. Each respondent is characterized as being a homeowner or not, based on a question about the ownership of their main residence. If the respondent, their partner and/or another member of the household owns the residence in question, then the respondent is characterized as a homeowner (i.e. “homeowner,” our dependent variable, equals “1”). For all other responses – i.e. the residence is owned by another individual, a company, the government or a cooperative – the respondent is not considered a homeowner (i.e. “homeowner” equals “0”).

We want to see whether the determinants of homeownership in CESEE are similar to those in selected OECD countries. Therefore, we include the regressors used in the papers mentioned above, i.e. variables for the respondents’ age and education, for their household’s income and composition, and for the size of the town in which their residence is located.¹⁹ For each, we apply a series of dummy variables such that in each broad category, the coefficients should be interpreted as differences relative to the excluded category. Individual age and education responses are divided into six and three bins, respectively.²⁰ Household income is divided into three within-country tertile bins. As in Goodman and Mayer (2018), our household composition dummies include dummies for households made up of single males, single females, married couples with children, married couples without children, single males with children, single males without children but with other

¹⁸ Using data from the Eurosystem Household Finance and Consumption Survey (HFCS), Arrondel et al. (2014) conducted a similar analysis for the euro area.

¹⁹ In addition to the above-mentioned regressors, Andrews and Sanchez (2011) and Goodman and Mayer (2018) consider respondents’ ethnicity. In our regression analysis, we do not include “ethnicity” as an additional regressor as the OeNB Euro Survey does not collect information on this characteristic.

²⁰ Similar to Andrews and Sanchez (2011), we excluded respondents under the age of 20 from the analysis. The “low education” group comprises those respondents who reported having completed primary education; the “medium education” group comprises those who reported having completed lower secondary, upper secondary or postsecondary nontertiary education; the “high education” group comprises those that have attained some level of tertiary education.

adults, single females with children, and single females without children but with other adults. Additional categorical household composition variables reflect the number of adults living in the residence (other than the respondent and their partner). Dwelling types are characterized as apartments, houses or “other,” a category which includes mobile homes and “improvised housing units.” Dummy variables are included to control for the size of towns (large, medium and small), with the cutoffs between them defined separately for each country by the 75th and 25th percentiles of the town size (for those towns with at least one respondent).

3.2 Regression results

Table 4 shows average marginal effects derived from the probit model outlined above. In general, the coefficients conform to patterns produced by similar exercises in other countries and regions. Across the ten countries, the age of the respondent strongly correlates with homeownership. Respondents in all age categories are less likely to own their residences than those aged 65 or older. Moreover, we observe monotonically increasing “age effects.” For instance, respondents in the 25–34 years cohort are nearly 23 percentage points less likely than the oldest cohort to own their dwelling, whereas those in the 45–54 year cohort are only 7 percentage points less likely to be homeowners than the oldest cohort.

We also observe a robust monotonic relationship between income categories and homeownership. Respondents in the bottom- and middle-income tertiles in their country are roughly 8 and 4 percentage points, respectively, less likely to be homeowners than those in the top income category. A clear positive relationship also exists between homeownership and the respondents’ level of education. Those in the lowest and middle education attainment categories are roughly 6 and 3 percentage points, respectively, less likely to be homeowners than those who have attained a higher level of formal education.

All these relationships – for age, income and education – resemble those identified recently for the United States (Goodman and Mayer, 2018) and selected OECD countries (Andrews and Sanchez, 2011). These similarities were by no means predictable *ex ante*. Considering the history of the CESEE-10 – the communist economic model, the dramatic postcommunist privatization reforms (applied in a manner exogenous to individual and household characteristics) and the shorter experience with housing markets – we would not have been surprised to find homeownership patterns that diverged substantially from those elsewhere. The robust positive correlations between homeownership and residents’ age, income and education levels are thus striking in their resemblance to patterns observed in countries with longer histories of housing markets and no communist legacy. Unfortunately, since we are operating with a single cross-sectional dataset, we cannot know with certainty whether these similarities in homeownership patterns represent patterns that date to the 1990s or to a more recent process of convergence.²¹

In table 4, we further see that single males living alone and single females living either alone or with others are less likely to be homeowners than married couples

²¹ Due to data limitations, we have not been able to study the dynamics in homeownership for the whole transition period. With its EU-SILC survey, Eurostat provides data on homeownership from 2003 onward; however, for most of the CESEE countries, data collection started later, and some CESEE countries, such as Albania or Bosnia and Herzegovina, are not covered by the EU-SILC survey. As far as we can tell, there are no other data on homeownership that cover a longer period of time and thus also allow for cross-country comparisons.

Table 4

Determinants of homeownership in the CESEE-10

Outcome variable: Homeowner (0/1)	(1) CESEE-10 countries	(1a) CESEE EU Member States	(1b) Western Balkan countries
Age			
<i>Base: 65 years and over</i>			
20–24 years	–0.268*** (0.022)	–0.287*** (0.029)	–0.240*** (0.034)
25–34 years	–0.228*** (0.014)	–0.275*** (0.019)	–0.155*** (0.020)
35–44 years	–0.134*** (0.013)	–0.160*** (0.018)	–0.096*** (0.018)
45–54 years	–0.073*** (0.010)	–0.086*** (0.014)	–0.056*** (0.014)
55–64 years	–0.033*** (0.010)	–0.041*** (0.014)	–0.024* (0.013)
Household income			
<i>Base: high income</i>			
Low income	–0.084*** (0.014)	–0.080*** (0.019)	–0.088*** (0.022)
Medium income	–0.041*** (0.010)	–0.048*** (0.014)	–0.027* (0.015)
Income: no answer	–0.003 (0.011)	0.005 (0.016)	–0.009 (0.015)
Education			
<i>Base: high education</i>			
Low education	–0.062*** (0.016)	–0.139*** (0.025)	0.006 (0.020)
Medium education	–0.031*** (0.009)	–0.054*** (0.012)	0.003 (0.014)
Household composition			
<i>Base: married couple living without children (but potentially with other adults)</i>			
Single male living alone	–0.080*** (0.018)	–0.098*** (0.024)	–0.042 (0.026)
Single female living alone	–0.057*** (0.017)	–0.073*** (0.022)	–0.027 (0.025)
Married couple living with children (and potentially with other adults)	0.015 (0.011)	0.031** (0.015)	–0.009 (0.014)
Single male living with children (and poten- tially with other adults)	–0.045 (0.033)	–0.091* (0.050)	0.017 (0.030)
Single male living with other adults but not with children	–0.019 (0.017)	–0.03 (0.026)	–0.003 (0.020)
Single female living with children (and potentially with other adults)	–0.087*** (0.026)	–0.070** (0.036)	–0.098*** (0.037)
Single female living with other adults but not with children	–0.065*** (0.020)	–0.036 (0.027)	–0.094*** (0.029)
Missing information	–0.067 (0.070)	–0.099 (0.096)	–0.013 (0.079)

Source: Authors' calculations based on weighted data from the fall 2017 wave of the OeNB Euro Survey.

Note: Average marginal effects from probit estimations. Robust standard errors (in parentheses) are adjusted for clustering at the primary-sampling-unit (PSU) level. *, ** and *** denote significance at the 1%, 5% and 10% level, respectively. The category "(1a) CESEE EU Member States" includes Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania. The category "(1b) Western Balkan countries" includes Albania, Bosnia and Herzegovina, North Macedonia, and Serbia.

Table 4 continued

Which features determine homeownership in the CESEE-10?

Outcome variable: Homeowner (0/1)	(1) CESEE-10 countries	(1a) CESEE EU Member States	(1b) Western Balkan countries
<i>Average marginal effects</i>			
Additional adults			
<i>Base: no additional adults</i>			
One additional adult	0.026** (0.013)	0.028 (0.018)	0.030* (0.018)
More than one additional adult	0.072*** (0.013)	0.070*** (0.019)	0.072*** (0.016)
Missing information	0.100* (0.052)	-0.015 (0.111)	0.124*** (0.037)
Type of dwelling			
<i>Base: house</i>			
Apartment	-0.082*** (0.013)	-0.093*** (0.018)	-0.063*** (0.019)
Other	-0.139** (0.070)	-0.137 (0.094)	-0.191* (0.115)
Town size			
<i>Base: large town</i>			
Small town	0.095*** (0.017)	0.102*** (0.023)	0.088*** (0.025)
Medium town	0.067*** (0.014)	0.063*** (0.018)	0.073*** (0.022)
Country fixed effects	yes	yes	yes
Pseudo R-squared (McFadden)	0.17	0.17	0.17
Pseudo R-squared (McKelvey & Zavoina)	0.30	0.29	0.29
Number of observations	9,688	5,857	3,831

Source: Authors' calculations based on weighted data from the fall 2017 wave of the OeNB Euro Survey.

Note: Average marginal effects from probit estimations. Robust standard errors (in parentheses) are adjusted for clustering at the primary-sampling-unit (PSU) level. *, ** and *** denote significance at the 1%, 5% and 10% level, respectively. The category "(1a) CESEE EU Member States" includes Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania. The category "(1b) Western Balkan countries" includes Albania, Bosnia and Herzegovina, North Macedonia, and Serbia.

without children (omitted category). There is no statistically significant difference in terms of homeownership between married couples with children and married couples without children. This is unlike what has been found recently for the United States, where married couples with children are 6 percentage points more likely to be homeowners than those without (Goodman and Mayer, 2018). This relationship, however, has been shown to vary across OECD countries, with some recording higher homeownership rates among couples with dependents and some having higher rates among couples without dependents (Andrews and Sanchez, 2011).

Table 4 also presents evidence that across the CESEE-10, apartment occupants are less likely to be homeowners than respondents living in detached or semidetached homes. Those in small and medium-sized towns are 9 and 6 percentage points, respectively, more likely to be homeowners than those in the largest population centers.²²

Comparing the models run on the subsets of EU Member States and non-Member States, we observe that the patterns associated with the United States and other OECD countries are more pronounced among the EU Member States. The difference in homeownership across age cohorts, for example, is starker in the CESEE

²² We ran several robustness checks, including unweighted regressions and clustering at the regional level. We also repeated the exercise estimating a logit model. None of these modifications qualitatively changed our results.

EU Member States than in the Western Balkan countries. In the United States, the 25–34 and the 35–44 years cohorts were 39 and 22 percentage points less likely, respectively, to be homeowners than those aged 65–74 (Goodman and Mayer, 2018). The CESEE EU Member States, more than the non-EU Member States, share this stronger correlation between age and homeownership. Similarly, more pronounced relationships between income and education on the one hand and homeownership on the other can be observed among the EU Member States. In the non-EU countries, unlike in the EU countries surveyed, we see no statistically significant relationship between respondents’ educational status and homeownership status. Moreover, in the non-EU countries, we observe only a statistically weak difference in terms of homeownership between the middle- and high-income categories. The statistically stronger positive relationships between homeownership and both education and income in the EU countries bear more resemblance to what has been recently observed for the United States and selected OECD countries (Andrews and Sanchez, 2011; Goodman and Mayer, 2018).

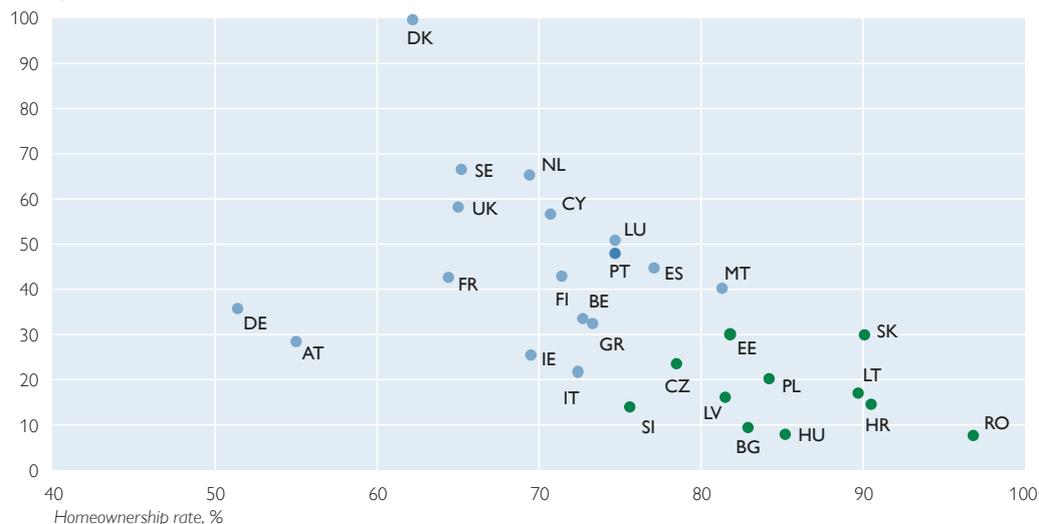
4 Homeownership and the household credit market

We have hypothesized that the high outright homeownership rates in CESEE in general suggest that the relatively high overall homeownership rates we observe there are unlikely to be the result of a robust and/or deep housing finance market. This conjecture is supported by chart 3, which shows the relationship between homeownership rates and housing loans (measured as a percentage of GDP) for the EU-28 Member States. The impression chart 3 gives is very similar to our previous comparisons: It shows that the postcommunist countries have very high homeownership rates and rather small housing loan markets when compared with the other

Chart 3

Housing loans versus homeownership rates in 2017

Housing loans to the household sector, % of GDP



Source: Eurostat EU-SILC (homeownership rates), OeNB 2019 (housing loans to the household sector, % of GDP).

Note: Green dots represent postcommunist countries; blue dots represent non-postcommunist countries.

EU Member States. It also shows that in CESEE the fraction of homeowners that are paying off a housing loan is low and the size of the housing loan market is comparatively small.

We elaborate on this point by using OeNB Euro Survey data to further explore the connections between people’s housing assets and household credit markets in the CESEE-10. We start by looking at the subset of individuals who report that their “largest, most important” loan was taken out for the purpose of financing their main residence or another house or apartment. This restricts us to a subsample of 816 respondents, a number representing slightly under 10% of the original sample and slightly more than 10% of all homeowners surveyed.

When respondents were asked if and how their “largest, most important” loan was secured, we were surprised to find that nearly half of these loans were not secured by any physical property. As table 5 shows, around 30% of these housing loans were unsecured and 17% were secured only by a third-party guarantee. 41% were secured by a physical asset and 13% by both a physical asset and a third-party guarantee.

Notable differences also exist between the EU Member States and the Western Balkan countries in our sample. Third-party guarantees are somewhat more likely in the Western Balkan countries (19%) than in the EU Member States (16%) in our sample. At the same time, in the CESEE-10 the combination of physical assets and third-party guarantees as a package to secure a loan is much more often used by banks in the EU Member States (15%) than in the Western Balkans (6%). When explaining the reasons for this pattern, we must of course consider the possibility that some of these mortgages are quite small or that the respondents are unfamiliar with the terms of their loan contracts. It is also plausible that respondents’ seemingly low propensity to pledge physical assets reflects the lack of smoothly functioning legal institutions and/or the correspondingly high costs of seizing pledged assets in the event of loan delinquency. To the extent that they are indeed operative, these factors could be expected to slow the development of mortgage markets in the CESEE-10.

Next, we compare how important real estate as collateral is across different types of loans. Table 6 reveals that most housing loans that are secured by physical

Table 5

Types of securities for bank loans used to finance housing

	(1) CESEE-10 countries	(1a) CESEE EU Member States	(1b) Western Balkan countries
	%		
Assets pledged	41.3	41.0	42.0
Third-party guarantor specified	16.7	15.8	18.9
Assets pledged and third-party guarantor specified	12.5	15.1	5.8
No security (neither assets pledged nor third-party guarantor specified)	29.6	28.1	33.3
Number of observations	816	590	226

Source: OeNB Euro Survey, fall 2017.

Note: Statistics are weighted. The category “(1a) CESEE EU Member States” includes Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania. The category “(1b) Western Balkan countries” includes Albania, Bosnia and Herzegovina, North Macedonia, and Serbia. We consider respondents who report that the purpose of their largest, most important loan (that they are currently paying off) is to finance the main residence or another house or apartment. For 728 out of the 816 observations, we know that the largest, most important loan refers to a bank loan; for the remaining 88 observations (i.e. respondents who have both bank loans and nonbank loans), we assume that the largest, most important loan (and hence, the information provided on housing loan securities) refers to a bank loan.

Table 6

Real estate and its usage as collateral security for different types of bank loans

	(1) CESEE-10 countries			(1a) CESEE EU Member States			(1b) Western Balkan countries		
	Percentage of loans secured by some asset	Percentage of loans secured by real estate asset	Number of observations	Percentage of loans secured by some asset	Percentage of loans secured by real estate asset	Number of observations	Percentage of loans secured by some asset	Percentage of loans secured by real estate asset	Number of observations
Housing loans	53.5	50.7	812	55.9	53.9	587	47.6	42.7	225
Consumption loans	16.0	7.6	769	11.0	5.6	502	25.1	11.3	267
Business loans	49.1	42.3	94	43.1	43.1	37	53.4	41.7	57
Other loans (e.g. loans for education)	16.8	10.2	330	15.8	15.2	163	17.7	5.3	167

Source: OeNB Euro Survey, fall 2017.

Note: Statistics are weighted. "Housing loans" comprise loans used to finance the main residence or another house or apartment; "consumption loans" comprise loans used to finance consumption goods such as furniture, traveling, household appliances or cars; "business loans" comprise loans used to finance a business or professional activity; the category "other loans" comprises loans used to finance education and any other types of loans. Statistics refer to a respondent's largest, most important bank loan (note that in some cases when respondents have both bank loans and nonbank loans, we assumed that the largest, most important loan refers to a bank loan). The category "(1a) CESEE EU Member States" includes Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania. The category "(1b) Western Balkan countries" includes Albania, Bosnia and Herzegovina, North Macedonia, and Serbia.

assets are secured by real estate, most likely the property for which the loan is taken out. In fact, 53.5% of all housing loans on which we have information are secured by some physical asset and 50.7% of all housing loans are secured by housing assets.²³ The percentages of mortgage loans secured by physical assets, generally, and real estate, specifically, are higher in the six CESEE EU Member States (53.9%) than in the Western Balkan countries (42.7%) of our sample. However, they are still lower than in other EU Member States with similar GDP per capita.²⁴

But real estate is also used as collateral for other loan types. Perhaps surprisingly, 8% of consumer loans and 10% of loans taken out for other purposes in our sample are secured by real estate. Here, the pattern between the two country groups within the CESEE-10 is ambiguous. While in the CESEE EU Member States in our sample, 6% of consumer loans are collateralized by real estate, this holds true for 11% in the Western Balkan countries. For loans taken out for other purposes, the comparison is reversed, with real estate being used as collateral more often in the CESEE EU Member States (15%) than in the Western Balkan countries (5%) in the sample. We also observe that physical assets play an important role as collateral in general and real estate assets, specifically, in financing business loans. 49.1% of the business loans reported are secured by some asset; and, in fact, the majority (42.3%) of business loans are secured by real estate. Here, there are no meaningful regional differences although we have to keep in mind that the number of business loans in our sample is small.

²³ Thus, 51% of housing loans are "mortgages" according to the definition applied in other surveys, e.g. the HFCS. See also footnote 2. Overall, 40% of all bank loans in our sample are housing loans.

²⁴ It is difficult to obtain comparable data for other countries as we observe the frequency of loans and not the amounts. Insights from a comparison with macrodata or banking supervision data based on amounts is limited. However, we can compare our results with HFCS results: In Portugal, where GDP per capita is comparable to that in Poland or Hungary, 34.7% of respondents hold mortgage debt; in Greece, where GDP per capita is slightly higher than in Romania, 13.3% of respondents hold mortgage debt (see European Central Bank, 2017, Table E1, "Percentage of households holding debt"). The corresponding figures from the OeNB Euro Survey are 4.3% for Poland, 6.4% for Hungary and 1.9% for Romania.

5 Conclusion

Our analysis shows that one generation after the fall of communism, homeownership and mortgage lending in the ten CESEE countries covered by the OeNB Euro Survey (CESEE-10) differ from the patterns in Western Europe in important respects. However, there are also interesting similarities. As in other studies on OECD countries, we observe robust positive correlations between homeownership and residents' age, income and education levels. Thus, the demographic characteristics of homeowners in our region of interest resemble those of homeowners in more mature market settings. In terms of homeownership levels, we still observe the legacy of communism and postcommunist privatization reforms, with rates of homeownership and outright homeownership being very high in CESEE. This is mirrored in the small size of the market for housing loans. Studying respondents' loan contracts in more depth, we find that only about half of the housing loans in our sample are collateralized by real estate and that a nonnegligible share of housing loans is secured by third-party guarantees. At the same time, real estate is used as collateral for other loan types as well. Regarding the role homeownership plays in the housing loan market, these last observations were the most surprising ones. They suggest that credit markets in CESEE have special features which banks operating there as well as researchers and policymakers should be aware of.

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Annex

Table A1

Definition of homeownership

Variable name	Variable type	Authors' definition	Definition by Eurostat EU-SILC
Homeowner	Dummy (0/1)	Based on the OeNB Euro Survey question "I would like to ask you some questions about your main residence, i.e., the house or apartment where your household lives for most of the year. Who owns your main residence?" (1) I own it myself (alone), (2) my partner owns, (3) I own it jointly with my partner, (4) I own it jointly with somebody else, (5) somebody, other than myself or my partner, in this household, (6) a family member or relative not living in this household, (7) another individual (not related to persons in this household/not a family member), (8) a company (that is not the employer of any household member), (9) employer of one of the household members, (10) a public institution, government or local authority, (11) a housing cooperative, or (12) other. Respondents can also state explicitly that they do not know the answer to a question. Furthermore, respondents can indicate that they do not want to answer a question. Respondents answering (1) to (5) are coded as homeowners with the dummy variable taking the value 1. Respondents answering (6) to (12) are considered non-homeowners and coded as zero. Respondents who did not answer the question or stated "do not know" were not taken into account in the analysis.	<p>Eurostat EU-SILC distinguishes five different statuses of tenure: (1) outright owner, (2) owner paying mortgage, (3) tenant or subtenant paying rent at prevailing or market rate, (4) accommodation is rented at a reduced rate (lower price than the market price), and (5) accommodation is provided free.</p> <p>The following qualifications and definitions apply to owners and households: "The owner of the accommodation should be a member of the household. If for instance the accommodation is provided by a relative (such as by parents to their children) who is not a member of the household, then one of the other categories should be ticked, depending on whether or not rent is paid by this household. A person is an owner if he/she possesses a title deed independently of whether the house is fully paid or not. A reversionary owner should be considered as the owner" (Methodological guidelines and description of EU-SILC target variables, Directorate F: Social Statistics, Unit F-4: Quality of life, Version August 2017, https://ec.europa.eu/eurostat/web/income-and-living-conditions/methodology).</p> <p>"A 'private household' means a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living. EU-SILC implementing regulation number 1983/2003 on updated definitions, defines households in terms of sharing household expenses and (for non-permanent members) in terms of duration of stay and (for temporarily absent members) in terms of duration of absence" (Eurostat Metadata, https://ec.europa.eu/eurostat/cache/metadata/en/ilc_esms.htm).</p>
Outright homeowner	Dummy (0/1)	Outright homeowners refer to homeowners who are neither paying back a loan on their main residence nor using that residence as collateral to secure another loan. If relevant information as to the purpose of the loan or the usage of collateral was missing, a respondent was classified as a non-outright homeowner. By doing so, we likely underestimate the outright homeownership rate. In the OeNB Euro Survey, information on the purpose and potential collateral of a loan is only available for a respondent's "largest, most important loan." For respondents who reported that their largest, most important loan refers to a nonhousing loan, we assumed that the respondent is currently not paying off a housing loan. It is thus possible that we mistakenly classify a respondent as an outright homeowner if she/he is still paying back a loan on the main residence, but the purpose of her/his largest, most important loan is different from financing the main residence.	<p>"The owner is considered as 'outright owner' when he/she has no more mortgage to pay for his/her main dwelling. An owner who has to pay a mortgage only for a second dwelling and/or for repairs, renovation, maintenance, etc. should be treated as 'outright owner'. If the owner has already fully paid the principal of the mortgage and only the interest remains outstanding, the risk of eviction probably remains and consequently in this case the owner cannot be treated as outright owner and should be considered as an owner paying mortgage" (Methodological guidelines and description of EU-SILC target variables, Directorate F: Social Statistics, Unit F-4: Quality of life, Version August 2017, https://ec.europa.eu/eurostat/web/income-and-living-conditions/methodology).</p>

Source: Authors' definition based on OeNB Euro Survey and definition by Eurostat EU-SILC.

Table A2

Definition of variables

Variable name	Variable type	Definition
Homeowner	Dummy	See table A1.
Age	Categorical	Respondents have been assigned to one of six different age groups: (1) 20–24 years, (2) 25–34 years, (3) 35–44 years, (4) 45–54 years, (5) 55–64 years and (6) 65 years and over. Respondents younger than 20 are excluded from the sample.
Household income	Categorical	Income is divided into three categories: (1) low, (2) middle and (3) high. Income groups were defined at the country level such that each group contains roughly one-third of the country's respondents. The category "Income: no answer" comprises all respondents who refused to disclose their income or who answered the question on income with "do not know."
Education	Categorical	Education is categorized into three groups: (1) low education, (2) medium education and (3) high education. "Low education" comprises primary education. "Medium education" comprises lower secondary, upper secondary and postsecondary nontertiary education. "High education" comprises tertiary education.
Household composition	Categorical	Categorization was undertaken in a way similar to Goodman and Mayer (2018). We distinguish the following categories: (1) single males living alone, (2) single females living alone, (3) married couples living with children (and potentially with other adults), (4) married couples living without children (but potentially with other adults), (5) single males living with children (and potentially with other adults), (6) single males not living with children but with other adults, (7) single females living with children (and potentially with other adults), (8) single females not living with children but with other adults. The last category, "Missing information," comprises all respondents who could not be clearly assigned to one of the above categories due to missing or contradicting information.
Additional adults	Categorical	Identifies the number of adults (aged 18 or older) that live in the same household as the respondent, excluding the respondent's spouse in case the respondent is married. For example, if a respondent lives together with her spouse and her two parents, then the number of additional adults is two.
Type of dwelling	Categorical	Three different types of dwellings are identified: (1) houses (detached houses, semidetached houses and farms), (2) apartments and (3) other types of dwellings (mobile homes, improvised housing units, etc.)
Town size	Categorical	Respondents were assigned to one of three categories depending on the size of their town of residence: (1) small towns, (2) medium towns or (3) large towns. The 25 th and 75 th percentiles (which were computed separately for each country based on information of the respondent's size of town) were used as cutoffs to assign respondents to one of three categories.

Source: Authors' compilation based on the OeNB Euro Survey.

Table A3

Descriptive statistics

	(1) CESEE-10 countries	(1a) CESEE EU Member States	(1b) Western Balkan countries
Outcome variable			
Homeowner (0/1)	0.83	0.80	0.88
Explanatory variables			
Age			
20–24 years	8.31	7.34	9.79
25–34 years	17.88	17.16	18.98
35–44 years	19.60	20.32	18.51
45–54 years	18.59	19.24	17.59
55–64 years	18.06	17.71	18.61
65 years and over	17.56	18.23	16.52
Household income			
Income: no answer	22.38	19.33	27.04
Low income	25.61	26.69	23.96
Medium income	27.52	28.97	25.29
High income	24.49	25.01	23.70
Education			
Low education	13.32	8.31	20.96
Medium education	66.92	73.19	57.32
High education	19.77	18.49	21.72
Household composition			
Single male living alone	5.64	6.62	4.12
Single female living alone	8.04	9.37	6.00
Married couple living with children (and potentially with other adults)	31.03	29.04	34.06
Married couple living without children (but potentially with other adults)	34.21	35.50	32.24
Single male living with children (and potentially with other adults)	1.71	1.60	1.88
Single male living with other adults but not with children	7.89	6.95	9.32
Single female living with children (and potentially with other adults)	3.41	3.28	3.60
Single female living with other adults but not with children	7.10	6.71	7.70
Missing information	0.98	0.92	1.07
Additional adults			
No additional adults	56.49	65.77	42.31
One additional adult	17.10	16.54	17.96
More than one additional adult	25.86	17.28	38.97
Missing information	0.55	0.41	0.76
Type of dwelling			
House	62.95	57.37	71.50
Apartment	36.51	41.97	28.16
Other type of dwelling	0.54	0.67	0.34
Town size			
Small town	26.92	27.20	26.49
Medium town	49.62	49.70	49.49
Large town	23.46	23.10	24.01
Number of observations	9,688	5,857	3,831

Source: OeNB Euro Survey, fall 2017.

Note: Entries refer to sample means (unweighted). Respondents younger than 20 are excluded from the sample. The category “(1a) CESEE EU Member States” includes Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania. The category “(1b) Western Balkan countries” includes Albania, Bosnia and Herzegovina, North Macedonia, and Serbia. The category “(1) CESEE-10 countries” includes all of the ten aforementioned countries.