

To Rent or to Buy – Analysis of Housing Tenure Choice Determined by Housing Policy

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Abstract

The article discusses the relatively large share of owner-occupied housing in the housing stock in selected European countries with relatively low per capita income and describes the underlying causes of this phenomenon. We also identify the economic implications of the growing number of owner-occupied housing and poorly developed rental market. The paper analyses home purchase or rental decisions and explains the correlations between housing availability, consumption and households' savings, as well as housing policy and investigates this question empirically. The way in which the development of the rental market can improve the situation in the property market is presented on the basis of a simple model.

Keywords: housing demand; home ownership; housing policy; financial market development.

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Introduction

Home ownership is of considerable importance for households as it generates a stream of utility, can be used as collateral and usually constitutes the biggest asset. Most new homes are purchased with a mortgage, which has a major impact on the banking sector. Housing is a good way to allocate savings, yet, hinders worker mobility. In Central and Eastern Europe (CEE) countries we observe a very high share of owner-occupied housing (OOH) as compared to rented housing. The purpose of this article is to explain in detail the underlying causes of this phenomenon and its economic implications. We present the share of owner-occupied housing and rental housing in selected European countries, as well as estimate from empirical data the determinants of the situation, such as legal regulations providing tenant protection or the tax shield. We explain how this legislation may affect the housing market, for example, result in the expansion of the grey economy or undermine labour mobility.

A rapid growth in real estate prices enhanced by excessive lending, which grew into the most serious economic crisis since the Great Recession, was one of the key developments in the global economy during the 2005-2007 period. The boom in the American housing market was driven by banks that had eased housing loan criteria and granted loans to individuals with insufficient financial capacities and high repayment risk. The increased availability of credit in the United States was driven by the relaxation of lending criteria as early as 1990 (see Ligon, 2013) and cuts in interest rates by the Fed. Chambers et al. (2008) show that these regulations were intended to increase the share of property owners by expanding the range of credit services and reducing the amount of buyer's down-payment. Many European countries undertook similar measures, expecting the growing share of owner-occupied housing in the housing stock to exert a positive impact on the economy. Yet, these actions brought major economic problems. Andre et al. (2013) show that in the majority of the OECD countries, the price to rent ratio (PR) and the price-to-income ratio (PI) were on an upward trend over a long period of time, until the rise in prices slowed down. At the same time, rents increased only slightly. This indicates the occurrence of a speculative bubble in the market as the non-arbitrage condition between rental income and alternative capital income was not met.

The purpose of this article is to explain households' decisions about housing tenure in European countries with a particular focus on Central and Eastern Europe. Based on the literature, we focus on housing policy and tenant protection regulations that, in our opinion, have a significant impact on households' decisions. The United States are an example, where the growing share of home ownership was supported by the government through easy credit (see Andrews and Sanchez, 2011a). In Poland, as a result of tenant protection regulations renting became risky for the landlord, which translated into growing rents or high tenancy deposits (see Gromnicka and Zysk, 2003 and the analysis in NBP, 2012a).

Often, the amount you pay for renting an apartment exceeds the instalment of the mortgage loan, as it has to be high enough to cover the landlord's risk. What's more, housing offered in the rental market is not always suited to meet the tenant needs, for example, it is too small (for families) or too large (for a student or an elderly person). As a result, some people are "forced" to buy a property, even though they would prefer to rent it and remain mobile. We run also an empirical analysis of the determinants of owner occupied housing. We look at the share of owners in total and also at those who have an outstanding mortgage. We see a significant difference in the determinants of those two groups. Our article does not question the positive aspects of home ownership, yet emphasizes that not everybody has such a need in a given period of life. There are also households that do not have the necessary funds to purchase housing, or are in need of social housing. It is necessary to identify the society's housing needs in order to develop a reasonable housing policy.

First section provides an overview of the housing market in Europe. We analyse the housing statistics in relation to GDP per capita income, income differences and basing on the fact whether the owner has children or not. Moreover, we present the housing policy in some countries. Section 2 presents a simple model of choosing between home ownership and rental. In Section 3 we run regressions to show the impact of housing policies and other factors on the owner occupied housing rate. Conclusions sum up the analysis and we give some housing policy recommendations.

1. Home ownership, home rental and tenant protection in Central and Eastern Europe and some other countries in Europe

In their comprehensive analysis, Andrews and Sanchez (2011a) show that the increase in the number of owner-occupied housing in the OECD countries is driven by demographic factors, interest rates and housing policy. Another article by these authors (2011b) identifies common elements of OECD countries' policy designed to facilitate home ownership thanks to special taxation and easy credit policy.

Based on Eurostat data it can be seen that countries with lower per capita GDP have a higher share of owner-occupied dwellings (see Figure 1). This situation may be observed in CEE or Mediterranean countries (Edgar et al., 2007) rather than in Western Europe. In the Mediterranean countries the high proportion of owner-occupied dwellings has a very long tradition associated with cultural aspects and the absence of a fully developed housing finance system (see Scanlon and Whitehead, 2004). The main reason behind this phenomenon in CEE countries is the 1990s privatization, which transformed public (de facto social)

housing into owner-occupied housing. The preferential sale of dwellings was a kind of compensation for very low wages in the socialist times, but also acted as a social shock absorber, easing high unemployment and mitigating other costs borne by the society during the transition period. Such a move was desirable from the point of view of social policy, since home owners tend to be, in many ways, better citizens (DiPasquale and Glaeser, 1999), and their offsprings do better at school (Haurin et al., 2002). There are also research papers which confirm that home owners perform better than tenants in the labour market, even though they are less mobile (Coulson and Fisher, 2002). An excessively high proportion of owner-occupied dwellings, however, has detrimental effects on employment in general (see Blanchflower and Oswald, 2013). The main negative consequence is lower worker mobility, commuting problems and a declining number of new businesses. The authors show that regions with a higher proportion of owner-occupied housing are typically marked by higher unemployment levels. What is important is the fact that the above effects are seen with a considerable time lag. This may explain why this situation is not usually the subject of analysis performed by researchers or policy-makers.

Amann (2009) estimated the share of rental housing in CEE countries. These countries, according to him, usually feature a small proportion of rented housing, i.e. less than 10% of the housing stock, while in the case of the 27 EU countries rented housing accounted for approx. 29% in 2007. Moreover, in EU countries with high per capita GDP (above EU average), this share is around 40%, most of which is rented on a preferential basis. Such a situation in the housing market allows households to rent suitable housing and the poorest ones to find shelter. Yet, such solutions require costly government subsidies.

The Eurostat data (2011) confirms the results of Amann. CEE countries have a larger share of owner-occupied dwellings, mainly due to privatization, mentioned in the introduction. Yet, the data may contain some irregularities as they fail to account for people who are currently living in a bigger city, renting an apartment unofficially, while still being registered as permanent residents with their families. Furthermore, there is probably a large number of young people who actually live with their parents, but would prefer to rent or buy a dwelling, if only had the necessary funds. For these reasons, the share of prospective apartment buyers or tenants may be higher than suggested by the data. An open question remains the optimal ratio of owner-occupied housing to rented housing in the times of economic growth when labour mobility is an important factor.

Figure 2 present the breakdown of the population in each country in terms of home ownership and income level. It may be noted that in households with incomes exceeding 60% of the median, the share of owner-occupied housing is higher. In countries with lower per capita GDP levels, most home owners do not have any outstanding financial obligations. In countries with higher GDP per capita levels, higher-income individuals (above 60% of the median income) generally finance home purchase with a credit (e.g. the Netherlands), while others (below

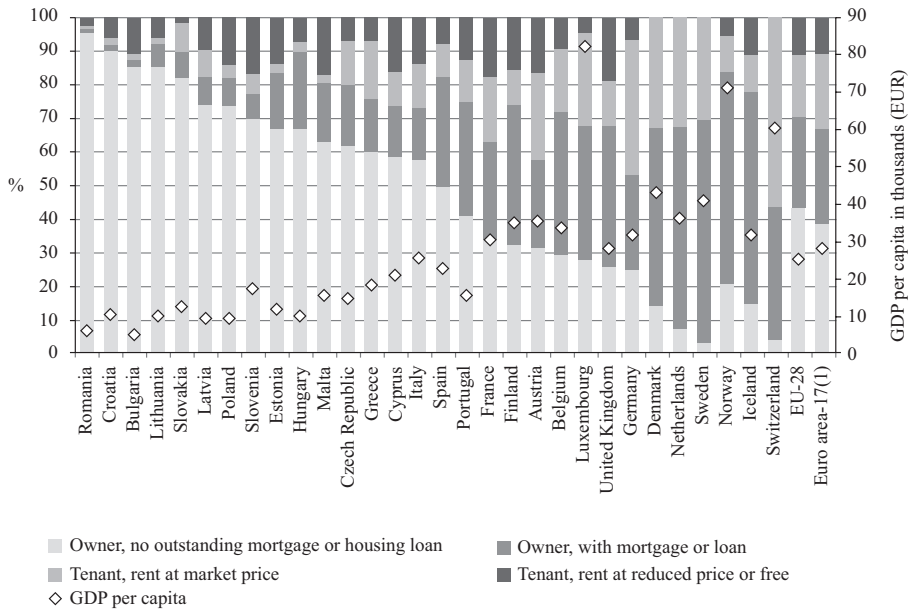


Figure 1. Breakdown of the population in terms of home ownership, 2011 (% of population).

Source: Eurostat.

60% of the median income) prefer rented housing. Attention should be drawn to the high proportion of home rentals in Western Europe, which may have a positive impact on the mobility of the working population. Research by Barcelo (2006) conducted on European Community Household Panel (ECHP) data for France, Germany, Italy, Spain and the United Kingdom shows that people renting an apartment at market rates were much more likely to move for professional reasons than those owning an apartment or renting at prices below market prices (social housing stock). Their analysis also showed that people burdened with a mortgage are also more likely to move than home owners without a financial burden.

Figure 3 shows the breakdown of the population in terms of home ownership and children. In CEE countries, the share of home owners without mortgage is very high, and the fact of having children only slightly affects their propensity to take a mortgage. However, in the case of the Western Europe, in households with children the percentage of owner-occupied dwellings is higher. Yet, they are burdened with a mortgage.

The situation that we observe in Europe is determined by four main factors: the historical and current economic situation, the banking sector, housing policy and demographic situation. In this paper we focus on housing policy, which regulates owner and tenant protection, subsidies and taxation. We present housing market solutions adopted in other countries that have a positive impact on the economic situation.



Figure 2. Breakdown of the population in terms of home ownership and income level, 2011 (% of the population, left bars - income above 60% of the equivalent income median, right bars - revenue below 60% of the equivalent income median).

Source: Eurostat.



Figure 3. Breakdown of the population in terms of home ownerships and type of household, 2011 (% of the population, left bars - households without children, right bars – households with children).

Source: Eurostat.

According to the 2011 Eurostat data, in **Germany** as many as 46.6% of households lived in rented housing. Scanlon and Whitehead (2004) argue that private home rental is considerably less expensive than home ownership. Moreover, rents are regulated by the Mietspiegel index, which determines the annually updated, average rent level for particular locations. It is a form of tenant protection. If the rent exceeds the index by more than 20%, the tenant can sue the landlord. The high share of rented housing is the consequence of a growing number of social programs launched in the past. Already in 1980, German investors had the possibility to take out subsidized loans for the construction of social housing, subsequently rented at lower prices. Once the loan was repaid, the property could be rented at market prices. In 1996 subsidies for households buying an apartment for the first time (Eigenheim - Zulage) were launched. The main objective of these measures was to ease financial constraints of low income young people. Aid was disbursed during the period of eight years after the purchase. Money was granted both for the purchase in the primary and in the secondary market. Moreover, additional aid was provided in respect of every child. It should be noted that the grants were small, and prudential appraisal of the apartment, based on the replacement value, did not allow property prices to rise. Bausparkassen loans offering lower interest rates as compared with other available credits are another incentive, encouraging home purchases. Under this scheme, future owners are required to have saved a certain amount of money for a period of approx. seven years before getting a loan. The interest rate is fixed and lower than interest rates on usual mortgage loans, however, the repayment period is short, which means high repayment instalments, likely to cause liquidity problems of the borrower.

In **Great Britain**, the OOH rate in 2011 was approx. 68%. That figure results from low real interest rates (Levin and Pryce, 2009) and readily available innovative banking products (such as offset credits¹, loans with flexible repayment options² or interest-only mortgages, Scanlon and Whitehead, 2004). The high share of owner-occupied dwellings was supported through enabling citizens to purchase cooperative and municipal housing stock at lower prices. Moreover, many programs have been launched with the aim to help low-income individuals. Assistance was also provided to borrowers in the event of unemployment or sickness³. In the rental market, low-income households may also receive cash assistance.

The situation in the **Swiss** housing market differs significantly from that in other countries (Bourassa et al. 2010). The state has an ambivalent attitude to owner-occupied housing and does not take any measures to increase the share

¹ Mortgage offset account - the amount of savings accumulated in the offset account reduces the capital on which interest is charged.

² Loan with flexible repayment options – possibility to adjust the amount of loan instalments to borrower's potential needs.

³ *Income Support for Mortgage Interest and Private Mortgage Protection Insurance Programme.*

of owner-occupied dwellings. However, many programs have been launched to strengthen the rental market, which accounts for 56% of the housing stock. It is worth noting that institutional investors in Switzerland hold approximately 28% of property for rent. Investors can borrow on preferential terms (at zero or low interest) if the apartments are available at a lower rate to a particular group of people for a limited time. Moreover, a number of tenant protection regulations have been put in place (e.g. controlled rents, subsidies, rent deduction from taxable income). On the other hand, home owners are heavily taxed. In Switzerland, unlike in other countries, imputed rents are included in income for the purpose of income tax calculation. Moreover, hedonic models are used when calculating the price of a property for tax purposes and the value of collateral in the case of mortgage loans. The results of this method are more objective and the value more resistant to overvaluation during booms than those from the standard valuation method. The Swiss system encourages landlords to enter into long-term lease contracts. It gives a preferential treatment to tenants, being less attractive to investors.

In the **Czech Republic** the share of OOH is approximately 80% of the housing stock and, as in the case of Poland, is the result of privatization of the former state-owned assets (see Scanlon and Whitehead, 2004). The rental market is partially regulated, but does not solve the problem of housing shortage. Government support is not extensive, assistance is provided only to first-time home buyers. There are grants allocated to support municipal housing construction. It should be noted, however, that this is not a social housing stock, as 90% of housing is rented at market prices.

In **Hungary**, from 1989 to 1997, housing got privatized (see Scanlon and Whitehead, 2004). During this period, approximately 20% of the housing stock changed ownership from state-owned to privately-owned housing for approximately 15% of its market value. Currently, as much as approx. 90% of the housing stock is privately owned. Approximately 23% of dwellings are mortgage financed, which, as compared with other CEE countries, represents a large proportion. A home mortgage interest deduction was introduced in 1994. Initially, it concerned solely the primary market, only since 2002 it was extended to the secondary market. In 1996 a system of building and saving societies, similar to the German Bausparkassen was launched. The private rental market accounts for approximately 3% of the total housing stock, while 7% are rentals on preferential terms. In order to develop the social rental housing sector, the government launched in 2005 a program aimed to subsidize market rents for low-income families with children, yet its effects are still insignificant.

In **Poland** in 2011, about 82% of housing was owner-occupied, while approximately 18% of housing stock was rental housing (including approximately 14.5% of apartments rented at a preferential, lower rate). The OOH market seems to be gradually supported by interest rate cuts. Moreover, the situation of the housing sector is under considerable, positive impact of the government-subsidi-

dised housing scheme RNS (Family on their Own), started in 2006 and terminated in 2012. It was aimed to help households to purchase an apartment. Since 2014 a new MDM (Housing for the Young) scheme will provide a government subsidy to people who are under 35 years old in the form of a down payment. It will only apply to the primary market of dwellings and single-family houses. Moreover, the Act on the Protection of Home Buyers Rights, in force since April 2012, is intended to reduce buyer's risk associated with buying a property from a real estate developer. The Polish real estate market demonstrates a shortage of rental housing, both private and social housing. In Poland, the systems of Social Housing Associations (TBS) created by the Act of 26 October, 1995, was supposed to provide rental housing to low- to middle-income individuals, yet, the program failed to bring the expected results. On the other hand, private residential development is subject to considerable rental risk (risk of vacancy, breached contracts as well as unsolved eviction or defaulting tenant problems). Rents are not regulated, yet are at a relatively constant level.

The above analysis shows that the current situation in the housing market in particular countries is largely determined by governmental regulations. The situation is largely affected by programs intended to facilitate home ownership or rental. It should be noted that measures taken should provide an adequate response to specific needs of the society.

3. Factors impacting housing decisions

This section provides insight into housing decisions taken by households. First, we demonstrate the importance of housing in people's life and we explain how regulations as well as monetary and housing policy affect the choices of real estate market participants. The purpose of this article is to show that if renting is as expensive as purchasing, with inadequate housing policy, households will prefer to buy, even if they value mobility. Since the apartment is treated, sometimes erroneously, as a relatively safe and profitable way of allocating savings, it enhances the desire to own property⁴. Housing is also an asset protecting against inflation and may be used as collateral. The above factors encourage the home ownership in CEE countries. However, demand shocks, caused by relaxed loan granting criteria, inflate home prices. Yet, also high transaction costs should be taken into consideration, as they can impede the mobility of workers and make their situation worse in comparison to renters who could move much cheaper and faster.

The crucial role of housing is to generate a stream of housing services. In this respect, in the short term there is no difference between owner-occupied and

⁴We refer to the article by Łaszek (2013), who analyses the purchase of a real estate both as a consumer good and as an investment good, which translates into individual decisions of potential buyers.

rented housing. Yet, in the long term, the difference becomes more pronounced. In the short term, utility is provided by housing services, but in the long term, the utility of housing as an asset starts to outweigh. Housing ownership is generally the largest part of the household's wealth, which is usually a good protection against inflation and against rent increases⁵. The property can be used as collateral for a loan taken to generate revenue (e.g. in the case of a newly established business) or to smooth current consumption. Before undertaking a thorough analysis of decisions taken in the housing market, attention should be paid to household preferences which depend, among other things, on age and income. The age of tenants affect the rent they have to pay to the landlord. For example, young and mobile people are perceived as relatively risky tenants (e.g. less stable working conditions), and therefore pay higher rents than middle-aged persons. Older people prefer owning a property, considering it an asset for the future which they may let to obtain additional income. Moreover, the apartment may be later bequeathed to family members.

According to the literature, the optimal housing decision depends also on the cost of housing. Taxation of income and tax relief may make purchased apartments more attractive than rented housing (see Poterba, 1984). Banks' prudential regulations, especially those concerning buyer's down-payment, may hinder purchase decisions (see Stein, 1995). As we show in another article (Augustyniak et al., 2012) housing demand is also affected by multiplier effects, which mean that small variations in the cost of credit lead to strong fluctuations in demand. Likewise, preferences, alternative saving methods and housing policy can have a direct impact on purchase decisions. There exists an extensive literature that presents models of choosing between home ownership and rental and verifies them empirically. In 1983 Hendreson and Ioannides introduced a model which analysed the apartment both as a capital good and a consumer good. The authors concluded that if there are no transaction costs in the economy, tax distortions or credit limitations, the purchase decision is driven by demand for housing seen as both investment and a consumer good. This model was used as the basis for numerous analyses undertaken over the years and pursued in different directions. In 1994, Ioannides and Rosenthal empirically verified this model on data for the United States. Arrondel and Lefebvre (2001) developed a model that shows that there is a difference in consumption and investment demand, which determines the decision to purchase or rent housing. Banks et al. (2011) presented a study conducted for the United States and England, concerning housing consumption and the tendency of the elderly to change their apartment for a smaller dwelling. Sinai and Souleles (2005) found that owner-occupied housing provides protec-

⁵Yet, according to the NBP BaRN data (see NBP(2013)), during the last boom, rents were relatively stable or increased slightly, which undermines this statement. In the long term, rents show a slight upward trend. Especially for the elderly, who cannot expect significant revenue increase, home ownership can really boost their morale.

tion against rising rents. It should be noted that analytical results of the above studies depend on the assumed functional form of the utility function.

It would be very interesting to test the above models empirically for CEE countries, but to the best of our knowledge a lot of needed micro data is missing. We solve this problem and present an analysis of housing decisions, using generally available average data⁶ (income, prices, rents). We focus only on households that make housing tenure decisions at present, not on the entire housing stock. The model by Henderson and Ioannides (1983), empirically verified by Ioannides and Rosenthal (1994), seems also very useful to explain the tenure choice using aggregate data. We describe it briefly and modify its assumption to bring it closer to the problem a potential home buyer faces. Explicitly we include transaction costs that the owner has to bear if he sells the house.

The model by Henderson and Ioannides (1983) describes the current and future utility of a household. The stream of housing services (h) depends on the size of the property h_c and the level of intensity of its use, described by the $f(u)$ function (see equation 1).

$$h = h_c f(u); \quad f' > 0; \quad f'' < 0. \quad (1)$$

The parameter u reflects the intensity with which the apartment is used. For example, a permanent abode will be used on a regular basis, whereas a cottage will be used only occasionally. The utility of housing of a particular size increases with the growing intensity of its use, yet, marginal gains decrease. Home rental generates the same utility as ownership, but there are certain reasons why it is cheaper than purchase. Henderson and Ioannides (1983) assume that the landlord may not transfer all the maintenance cost⁷ to the tenant. In our opinion, the landlord may transfer all permanent maintenance costs to the tenant, yet there are significant transaction costs incurred exclusively by the owner at the time of sale (see also Augustyniak et al., 2012). For example the recent developments in the USA show that especially owners with a loan, who could not pay back the loan and had to move out of their house incurred high costs. First they lost their home, secondly the number of renters increased drastically, which raised rent levels and consequently (see JCHS 2013 a,b). In this article we want to emphasize the role of transaction costs⁸. First, they include fees (notary's fees and real estate agent's

⁶The indicator analysis is rather commonly used in the NBP's property market analyses and allows for an in-depth assessment of the market.

⁷Maintenance costs include not only monetary costs but also the time spent on housing maintenance, its depreciation, etc.

⁸Transaction costs incurred upon purchase and sale of the property are an important factor influencing the choices of housing market participants. They are estimated for different countries by EMF (2010). Direct costs related to the purchase and credit usually account for a few percentage points of the property value. There are also indirect costs, so the total cost may account for as much as 15% of the property value. Sanchez and Andrews (2011) present a detailed description of transaction costs, paying attention to the situation in the rental market and the likelihood of home change in the OECD countries. According to the results of their research, regulation of

commission) and taxes. What's more, when selling an apartment, the owner incurs a risk of not being able to recover funds spent on fixing or refurbishment of the apartment. Moreover, it takes time to find a buyer and conclude the transaction, which generates additional costs. Maintenance costs and subsequent costs associated with the change of housing are described by the $T(u)$ function for the owner and the $\tau(u)$ function for the tenant. At each level of home use, costs incurred by the owner are significantly higher than costs borne by the tenant ($T(u) > \tau(u)$). These costs are rising with an growing level of utilization u .

$$(2) \quad T(u); \quad T' > 0; \quad T'' > 0.$$

$$(3) \quad \tau(u); \quad \tau' > 0; \quad \tau'' > 0.$$

When a household chooses between home rental and ownership, it optimizes its multi-period utility. According to the Bellman equation, optimization in the multi-period model requires optimal decisions in two consecutive periods. Then all other decisions are also optimal. Therefore, the model assumes the existence of two consecutive periods: the current period (1) and the future period (2). To simplify the notation and the model, Henderson and Ioannides (1983) assume that maintenance costs are incurred in the second period. In the subsequent part, we describe the problem of housing tenure choice.

If a household decides for home ownership, it maximizes its current utility U as well as the future utility from its wealth $V(w)$. This is done by choosing the optimal size of housing h_c , the level of its use u , the value of savings S and other consumer goods x , taking into account the household's budget constraints arising from its income in subsequent periods (Y_1 and Y_2) and housing price P and the value of its assets at the beginning of the following period w . For the further analysis, the value of housing Ph_c (price of sq. m times the size of housing in sq. m) is multiplied by the interest rate r , to capture the fact that the purchase of housing is financed by a loan, thus the loan repayment⁹ is the owner's current expense. The owner therefore solves the problem described by equations (4).

$$(4) \quad \begin{aligned} \max \quad & U(x, f(u)h_c) + V(w) \\ & y_1 = x + Ph_c + S \\ & w = y_2 + S(1 + r) + Ph_c - T(u)h_c \end{aligned}$$

The tenant has a similar utility function, yet, he has to pay the rent R and in the next period has savings from the previous period only.

rents and protection of tenant rights limit the mobility of households. On the other hand, also high transaction costs usually borne by the buyer, reduce mobility of home owners.

⁹To make things simpler, at this point we do not take into account the buyer's down-payment, but the fixed loan instalment only.

$$\begin{aligned} \max \quad & U(x, f(u)h_c) + V(w) \\ & y_1 = x + S + Rh_c \\ & w = y_2 + S(1 + r) - \tau(u)h_c \end{aligned} \tag{5}$$

The rental market will be in equilibrium if the alternative cost of capital invested in the apartment will be covered by the stream of discounted income generated by the rent (6).

It should be remembered that the landlord has a higher cost of living than the tenant, and the effective rent income will be reduced by the difference between these costs. The property price may vary from period to period, and it is assumed that the rent will adjust to the price accordingly.

$$\frac{rP}{1 + r} = R - \frac{T(u) - \tau(u)}{1 + r} \tag{6}$$

The analytical solution of the model and the existence of an equilibrium are presented in detail in Henderson and Ioannides (1983). Based on their analytical model, we present a graphical analysis of choices made by participants in the property market as suggested by Ioannides and Rosenthal (1994). They used figure 4 to show how the ratio of housing consumption H_C to housing investment H_I affects the overall demand for housing. The desire to consume housing or to own it in the form of investment depends on a set of variables X , which are factors affecting demand (e.g. income, etc.). The magnitude of the difference between the desire to consume and invest, determines whether a household will buy or rent housing.

We rely on the graphical analysis by Ioannides and Rosenthal (1994)¹⁰ and adapt this analysis to the situation observed in CEE countries (see Figure 4). In Central and Eastern Europe there is a relatively large group of people living in social or subsidized housing (Rent 1) – see Figure 1. A relatively small number of households rent apartments at market prices (Rent 2). The largest group of households have one residential dwelling (Owner 1). There are also households that have more than one apartment and put some of them for rent in the rental market (Owner 2).

What needs to be emphasised is the difference between the existing housing stock as shown in Figure 1, and the society's housing needs, which we analyze. We observe a strong need for housing in various age groups in CEE countries (this was especially reflected in the recent price boom). Due to the relatively high

¹⁰The authors divide the market into 4 parts. Rent 1 means households which rent housing only, Rent 2 are home owners which, for various reasons, rent different housing. Owners 1 own a property which they use by their own, whereas Owners 2 own a number of dwellings for rent and live in one of them.

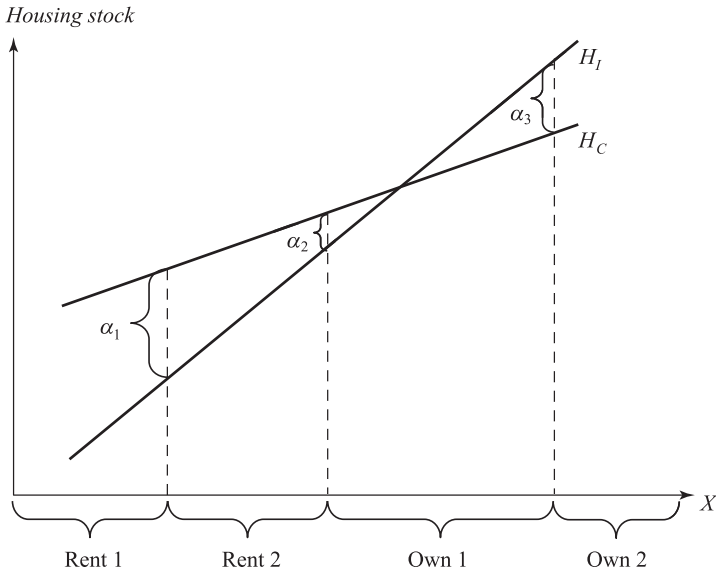


Figure 4. Demand for housing consumption and housing investment in the Henderson and Ioannides model (1983).

Source: Ioannides and Rosenthal (1994).

cost of rental, the housing investment function is inclined towards the housing consumption function, which explains the housing booms caused by the growth in bank lending. In a complementary article (Augustyniak et al. 2013a) we present a model that explains how increased housing desire fuelled with low interest translates into strong demand in the primary and secondary market. As we point out in Augustyniak et al. (2013b) such demand shocks generate strong price increases and an excessive production of real estate development housing. In the next section we investigate empirically what explains the high desire to own, thus the high OOH rate in given countries, which will help us to draw some housing policy recommendations.

4. Empirical analysis of the OOH rate determinants in Europe

Now, we investigate empirically under which structural and economic conditions households can prefer owned housing over renting. We do not have enough comparable data at the micro-level, especially for CEE countries, to perform an analysis similar as in Ioannides and Rosenthal (1994) thus we look at aggregate country data. Basing on the empirical analysis presented by Fisher and Jaffee (2003) as well as in Andrews and Sanchez (2011b), we estimate the determinants of the homeowner rate in selected European countries. In our analysis, we focus on two facts, namely OOH in general and also on OOH with an outstand-

ing credit. This distinction is very important, because the first measure gives a general picture of the housing situation in a country, while the other can help to explain housing desires and housing choices in the recent years. We should bear in mind that the share of OOH is a very slowly moving variable, as it takes years until a significant fraction of the population moves or changes its tenure choice. Basing on the theoretical model of Henderson and Ioannides (1983) we assume that the main tenure choice drivers are income per capita and other factors which determine the housing consumption and housing investment function. The most important structural factor, which has a deep historical background is the degree of urbanization. In most countries it is common that housing in urban areas is rented or purchased with a loan, while in rural areas houses are family owned for decades. In many cases people can use their own land and quite often use do-it-yourself construction methods with a lot of help from their family and neighbors, which reduces the construction costs significantly. Contrary, in urban regions multifamily dwellings are the dominant housing form, and it requires to purchase land and use a construction company to build those. Therefore, it is *ex ante* more likely to find renters in urban areas, as OOH can be quite expensive. An important factor in some European countries is also the loss of a significant number of houses and condominiums linked to the destruction during World War II and the later nationalization of private property. This property was privatized in former socialistic countries in the beginning of the 1990's. Beside those structural factors, we cover the economic determinants of the consumption and investment demand. To be a housing owner one needs to obtain enough income, thus the GDP per capita level or the income inequality in a country should have an impact on the OOH rate. As in the Henderson and Ioannides (1983) paper, one can either invest in housing and bear the full costs or rent and try to accumulate capital in other forms of investment. The choice is affected by the difference in rental and ownership costs which stem from the special tax treatment of OOH. We observe that some countries tax imputed rent, which makes owning less attractive, while others give tax subsidies on housing mortgages, which make households take loans. Another factor that impacts the tenure choice are special rent regulations, that is specific protection of tenants, which in some countries make renting very cheap, while in other countries they impose risks to landlords, who then increase rents to cover the risk premium. As data on rent regulations is not easily available and comparable for many countries, we decided to follow two approaches. The first approach bases on data on the rent-to-price rate in various countries that we calculate from Global Property Guide data. It can be considered a yield that the housing owner receives and is the cost the tenant has to bear. The owner saves his money in form of housing and bears the ownership costs. If the owner would like to live in a similar rented house, he would need to pay a rent to a landlord and could use the remaining money to invest in bonds. If the rent is indeed low, the tenant can invest his remaining disposable income in government bonds, for example. In this case the household will not be a housing owner, but will ac-

cumulate capital as an investor. However, if rents are high in relation to house prices, the tenant can finance the house purchase with rent payments after a few years and would decide to become a homeowner. The higher this ratio, the more willing the tenant is to buy housing. However, internationally comparable rent data cover only apartments in the capital city, therefore we would like to use also an alternative measure. The other approach is to look at the rule of law, e.g. the time it takes for the landlord to evict a tenant and infer the potential rent to price ratio from it. We can assume that if the law strongly protects the tenant or the court system works inefficiently, the landlord will bear a high risk and thus ask for a higher rent. Further on, as discussed earlier, transaction costs can hinder people from becoming home owners. Another factor that makes renting more attractive are high lending interest rates on housing loans. Finally, the standing of the government, measured by the 10 year government bond rate, shows us how trustworthy the whole economy is. When investors trust the government, i.e. the bond rate is quite low, also citizens can trust banks etc. and are willing to invest their money in various assets. However, if households do not trust the system too much, they prefer to put their money in their own housing. We test our assumptions empirically. We take housing data for the year 2011, as that data is quite recent and also the economic effects of the recent financial crisis faded away to a large extent. Concerning the housing policy indicators or the tenant protection we know that those are parameters that do not change too much in the short run.

We first analyse the determinants of the OOH rate¹¹ in 29 European countries¹². The regression results are presented in Table 1. We can see that the OOH rate declines with growing GDP per capita levels. However, the effect is not linear as captured by the GDP per capita squared. The urban population share does not improve the estimation results. In regressions 2-8 we included the OOH taxation policy and in most regression it has the expected, significant effect. If the government subsidises OOH housing by either allowing to deduct interest rate payments from taxes or gives other subsidies, it increases the OOH rate. The purchasing cost, included in regressions 3-8 has the expected sign, but is in most cases insignificant. The length of the tenant eviction process included in regres-

¹¹Data description and sources: GDP per capita in euro, Owner Occupied Housing (OOH) data (credit and not credit), as well as 10 year Government Bonds and Housing Lending Interest Rate, Overcrowding Rate, the housing transaction cost and GINI index come from Eurostat data and refer to the 2011. OOH Taxation and Rent Regulation Index were constructed on Eurostat data and refer to 2007 (latest available data). Rent to Price (R to P) come from Global Property Guide <http://www.globalpropertyguide.com/Europe/price-rent-ratio>. Urban Population and Unemployment Rate come from World Bank statistical data and refer to 2011. Tenant Eviction and Check Collection data (in days) come from LexMundi tables, presented in Djankov et al. (2003).

¹²Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

sion 4 does not help to explain the OOH rate. In regression 5 we include the rent to price rate and find that it significantly increases the OOH rate. This is in line with the assumption that if rents are relatively high in comparison to the purchase cost, households prefer to own housing. We included the government bond rate in regressions 6-8, which can be considered as a proxy for the perception of the general economic and political situation in a country. Indeed a higher bond rate is associated with a higher OOH rate. We think that structural facts, like the history of a country, determine both variables simultaneously. Finally, in regression 8 we included also the GINI index which measures the income inequality, but it did not improve the regression results. The analysis of the GINI data shows that there is no significant difference between the GINI index among the analysed countries. The only puzzling variable is the duration of the tenant eviction process, which has a negative sign. One potential explanation is that some of the OOH housing is bought in order to rent it to tenants, but when the rental market is risky, people are not that willing to invest in housing. Maybe other measures should be used, but we did not find any better measure that exists for all analysed countries. We also included dummies for CEE and southern Europe countries, but those were insignificant. It is very likely that the political or cultural background of a country is already captured in the GDP per capita levels. Also the unemployment rate, the rent regulation index and the overcrowding rate were insignificant, most likely due to the previously mentioned reasons.

In the second part of our analysis we regress the determinants of the rate of housing owners that have an outstanding mortgage. We assume that owners that have no outstanding debt either own the housing for long enough to have paid back the mortgage, obtained it through a bequest or from the state during the privatization process. Also, they might have owned another dwelling, sold it and added money to buy another one. In any way, owning a dwelling without a mortgage has rather a historical background and is only marginally affected by the current economic situation. Our aim is find the determinants of relatively recent housing decisions. Housing tenure in the whole population changes only slowly. We assume that households who have an outstanding mortgage purchased the housing during the recent decade or so, on average.

When we regress the rate of OOH with outstanding loan on other variables, we find that this rate increases with the GDP per capita level, but the marginal effect is diminishing. This is an important finding, because the OOH rate in total was declining with rising GDP per capita levels. We know from Eurostat (2011) data presented in figure 1 that in richer countries people who own housing finance it also in most cases with a loan. And as explained previously, one needs to reach a certain income level to be able to take out a loan in the first place. The share of urban population has a positive effect on the OOH rate with outstanding mortgage in all regression specifications. This confirms our assumption that in rural regions housing belongs to families over decades and they do not need to purchase housing with the help of loan. Contrary, in urban regions people need to

Table 1. Determinants of OOH rate in 29 European countries

	1	2	3	4	5	6	7	8
GDP_percapita	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.000)	-0.001 (0.000)	-0.001 (0.000)	-0.002 (0.000)
GDP_percapita_sq	1.43e-08 (6.12e-09)	1.50e-08 (6.34e-09)	1.52e-08 (6.75e-09)	1.66e-08 (6.42e-09)	1.50e-08 (7.11e-09)	1.10e-08 (5.57e-09)	1.24e-08 (5.71e-09)	1.43e-08 (5.41e-09)
Urban_pop	0.095 (0.118)	0.069 (0.122)	0.125 (0.129)	0.065 (0.148)	0.164 (0.131)	0.112 (0.123)	0.061 (0.128)	0.010 (0.137)
OOH_taxation		2.458 (1.521)	2.959 (1.736)	3.428 (1.724)	2.568 (1.723)	3.926 (1.680)	4.285 (1.812)	3.935 (1.732)
Transaction_cost			-0.486 (0.405)	-0.399 (0.460)	-0.275 (0.482)	-0.501 (0.402)	-0.424 (0.423)	-0.347 (0.421)
GINI								-0.618 0.438
R_to_P					1.645 (1.082)			
GovBonds						5.783 (2.574)	5.494 (2.622)	4.808 (2.551)
Tenant_eviction				-0.010 (0.007)			-0.008 (0.007)	-0.012 (0.006)
_cons	94.163 (7.393)	91.587 (8.147)	91.697 (8.635)	99.397 (9.106)	79.783 (11.529)	56.031 (16.916)	64.495 (18.280)	94.254 (29.669)
R-sq.	0.63	0.68	0.69	0.73	0.72	0.78	0.80	0.83
Adj. R-sq.	0.59	0.63	0.63	0.66	0.65	0.72	0.74	0.77

Note: Robust (bootstrapped 1000 times) standard errors in brackets. Significance at 1%, 5% and 10% level, bold.

Table 2. Determinants of the OOH rate without an outstanding loan or mortgage in 29 European countries

	1	2	3	4	5	6	7	8	9
GDP_percapita	0.002 (0.000)	0.002 (0.000)	0.002 (0.000)	0.002 (0.000)	0.002 (0.001)	0.002 (0.001)	0.002 (0.000)	0.001 (0.000)	0.002 (0.000)
GDP_percapita_sq	-1.34E-08 (8.73E-09)	-1.32E-08 (8.2E-09)	-1.28E-08 (6.53E-09)	-1.29E-08 (6.46E-09)	-1.31E-08 (9.09E-09)	-1.53E-08 (8.28E-09)	-1.71E-08 (7.21E-09)	-1.09E-08 (6.23E-09)	-1.51E-08 (5.74E-09)
Urban_pop	0.376 (0.177)	0.370 (0.183)	0.510 (0.179)	0.516 (0.196)	0.583 (0.181)	0.498 (0.194)	0.497 (0.173)	0.431 (0.171)	0.427 (0.177)
OOH_taxation		0.605 (1.630)	1.870 (1.639)	1.940 (1.824)	1.135 (1.412)	2.180 (1.711)	2.870 (1.355)	2.491 (1.698)	3.361 (1.588)
Transaction_cost			-1.230 (0.469)	-1.238 (0.526)	-0.832 (0.562)	-1.093 (0.526)	-1.244 (0.484)	-1.114 (0.489)	-1.140 (0.451)
GINI				0.110 (0.682)				3.097 (2.021)	
R_to_P					3.097 (2.021)				
H_Lending_rate						1.407 (1.808)			
GovBonds							5.976 (2.736)		5.581 (2.578)
Tenant_eviction								-0.013 (0.008)	-0.011 (0.007)
_cons	-30.938 (11.235)	-31.572 (11.688)	-31.293 (10.779)	-35.382 (27.184)	-53.721 (16.077)	-45.394 (22.438)	-68.149 (20.307)	-21.118 (11.991)	-56.572 (21.543)
R-sq.	0.76	0.76	0.80	0.80	0.84	0.81	0.84	0.83	0.86
Adj. R-sq.	0.73	0.72	0.76	0.75	0.79	0.76	0.79	0.78	0.81

Note: Robust (bootstrapped 1000 times) standard errors in brackets, Significance at 1%, 5% and 10% level, bold.

finance housing with a loan to a large extent. The OOH taxation plays surprisingly a very little role, as it is insignificant in most regressions 2-6, 8. The rationale behind our finding is that the taxing policy has little effect on new purchases, but rather helps owners to stay owners for the whole life. If for example the taxing policy would favour renting a lot, at some point owners would prefer to sell housing and rent it. Such a case is indeed Switzerland, where imputed rents of owners are taxed and people prefer to rent, as described in section 2. Quite intuitively, the housing transaction cost has a negative and in most cases significant effect. Most likely, if the transaction costs are high enough, this prevents people that are relatively indifferent between renting and buying from owning a property. On the other hand, the government bond rate has a strong impact on the OOH rate in regressions 7 and 9. As stated before, under high government bond rates people might have relatively little trust in the economy and prefer to keep their wealth in housing than in other forms of saving. The GINI coefficient and the housing lending rate do not have any significant effect in regressions 3-9. A surprising result is the fact that the duration of the tenant eviction process has a negative effect on the OOH rate. We expected that it rises the landlord's risk and translates into higher rents, which finally make households to purchase housing. One reasonable explanation is, as also stated in the previous regression, that a part of housing is bought in order to rent it to tenants and a high risk makes this kind of investment less attractive. However, this idea should be investigated further. The biggest problem is that there does not exist any possibility to distinguish from OOH that is bought to be used by the owner or to be rented to tenants.

Summarizing the regression results presented in table 2 we can point out three interesting findings. Countries with a higher GDP per capita level tend to have a larger share of OOH with an outstanding mortgage. A preferential tax treatment of ownership increases the OOH rate, while purchasing costs decrease this rate. Finally, high government bond rates seem to increase the OOH rate, but we cannot exclude that both variables are the result of the political and historical background of a country.

Summary and housing policy recommendations

The analysis of the housing market regulations and the regression of the OOH rate in 29 European countries on economic, structural and housing policy factors allows us to draw some conclusions about the drivers of the high OOH rate in poorer European countries. We find a strong negative correlation between the OOH rate and the GDP per capita level. This result can be attributed to the past, as in most CEE countries the housing stock was privatized to a large degree. Moreover, we find a positive relationship between housing that is bought with a mortgage and the GDP per capita level. This tells us, that people in richer countries prefer less OOH, and if they want to have owned housing they need to finance it with a loan in most cases. Moreover, we find a strong impact of the

urbanization rate on the rate of housing purchases financed with a loan, which we attribute to the fact that housing in urban areas is quite costly and can be usually financed with a loan only. Moreover, the preferential tax treatment of OOH housing, high government bond rates and low transaction costs make households to purchase owned housing.

We connect our empirical results with the Henderson and Ioannides (1983) model and its application by Ioannides and Rosenthal (1994), depicted in figure 4, in order to give some detailed housing policy recommendations. An adequate housing policy, likely to provide much cheaper rental, would significantly reduce the need and desire to purchase housing, which would, in turn, ease the cycle in the residential market. What should be done then? The group Rent 1 should have their needs fully satisfied with social housing as their income allows them neither to purchase housing nor rent housing at market rates. This small percentage of households is in need of government's assistance. Individuals belonging to the group Rent 2 are interested in renting at market rates, and therefore, would welcome an appropriate regulation of legal issues. They do not need home ownership but are looking for a dwelling tailored to their housing needs. If appropriate legal regulations are in place, protecting both tenants' rights and home owners' interests, a sizeable group of home owners (Own 2) will be formed. They will have both their own dwelling as well as one or more apartments for rent to meet the needs of households belonging to the group Rent 2. Moreover, they do not have to own housing directly, if they can own shares in an investment fund, which provides professional tenant services. This solution is more transparent and less time consuming for the home owner. Appropriate legal regulations will enable landlords to benefit from a tax relief, and, at the same time, will force them to leave the grey economy. They will have to pay taxes and sign formal lease contracts. Obviously, such a solution is costly for the government, but contributes to the appropriate operation of the housing market. Finally, the group Own 1 will consist of individuals actually wishing to buy housing. If they purchase housing with cash, they will appraise it themselves and keep prices low. If, however, housing is financed with a loan, prudential housing appraisal methods need to be applied when granting a mortgage. Otherwise, as our analysis in Augustyniak et al. (2013a) shows, excessively easy access to credit inflates house prices and leads to price bubbles. Moreover, if the rental market performs well, individuals who are just looking for a place to live but do not wish to purchase housing, will not add to the homeowners' group and therefore will not generate an upward pressure on house prices. Appropriate regulations, designed to increase home rental availability and to reduce prices in the rental market, improve the working of the housing market and increase the worker mobility and strengthen the stability of the financial system.

In order to improve the situation in the housing market it is necessary to distinguish between different types of households, taking into account their income and housing needs. Low-income households should be provided assistance

in the form of social housing stock. There are several possible solutions. First, local governments may enter into contracts and let their social housing stock to private individuals on a short-term basis. Another option is to create a program of a relatively low-cost, medium-quality housing. As mentioned above, some EU countries are trying to meet housing needs with homes built by private investors with the government's assistance. In Poland, the system of Social Housing Associations strove to reach a similar aim, yet, it failed to bring the expected results, while generating huge costs to the state budget.

Moreover, the residential market in most CEE countries does not have a fully developed system of private rental housing. Private rental housing, which accounts for less than 10% of the total housing stock, is not intended as social assistance, but it is addressed to people wishing to rent housing at market rates. In the case of Poland for example, the key issue is to regulate the landlord-tenant relationship through contracts with clearly defined terms and conditions. The existing tenant protection laws are a huge obstacle to the development of the rental market. We believe that both parties should be guaranteed protection under the law - the landlord against abuse by the tenant, the tenant against excessive rent increases or groundless eviction. However, excessive protection may adversely affect the development of the rental market (e.g. by protecting the defaulting tenant we discourage potential investors from entering professional rental services). Additionally, proper regulations governing site management and construction ensure safety and improve the environment as well as neighbours' relations.

On the other hand, a careful, prudential method of real estate appraisal and appropriate loan granting criteria are necessary to limit the possibility of fast home acquisition by individuals without the necessary funds, which will make house prices more stable and therefore stabilize also the whole economy.

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