

Regional Diversification of Saturation of the Housing Stock. Poland against the Background of Europe

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Abstract

The aim of the article is to present the differences in saturation of the housing stock and its availability in Poland as well as in European Union countries and its influence on house prices and the economy. Regions which are characterized by a housing shortage will be separated. The analysis takes into account the differences in the level of wealth of the inhabitants and the scale of urbanization of individual states. The implications of social and economic imperfections in the functioning of the housing market, and in particular the price volatility of housing, have also been addressed. In addition, the quantitative and qualitative differences in the housing stock, which reduce the effective stock of available housing, are highlighted. In the case of Poland, only in Warsaw and Łódź does housing saturation correspond to that of the "old" EU. This article is divided into 5 parts. After an introduction to the subject, the second section deals with the issues of structural, long-term imbalances of demand and supply in the European housing market and its consequences. In the third section, the housing situation in the EU is presented. In the fourth part, the regional diversification in the housing stock in Poland is discussed. Section five consists of conclusions and a summary of the analysis.

Keywords: housing demand, housing supply, regionalization of the housing situation, urbanization

JEL classification: M2, O18, R31

General problems of researching the housing market and housing situation

In all countries, the real estate sector, particularly housing, is of vital social and economic importance. In the literature, in general it is accepted that in the long term the Wheaton-DiPasquale model (DiPasquale and Wheaton 1992) functions, which means that the housing stock adjusts to income levels and interest rates. However, in the short term, counted in years, the fluctuations in income and interest rates are much stronger than the ability of the housing supply to adjust, in the case of the housing stock as a whole. These imbalances, both downward and upward, contribute to strong price fluctuations, and consequently fluctuations in housing production. Apartments are a capital-intensive and multi-generational good, and their stock is accumulated over the years. Therefore, the real estate market grows cyclically and is local in nature, which is a result of the local impact of changing demand as well as rigid supply in the short term. These are factors which in turn are affected by the real sector (construction companies, developers, customers), the financial sector (which lends to buyers and producers of housing) and the public sector (regulating the market). As a result of differences in the level of growth of selected countries or regions and the local nature of the impact of the above-mentioned factors, disproportions appear between the overall level of development and the related income of the population on the one hand, and the level of housing consumption, measured by standard measures such as the number of dwellings per 1 000 inhabitants or living space per person (in square meters) on the other hand. Typically, the housing stock, due to technical reasons, can grow by about 1% a year without putting strain on the rest

of the economy. Stronger growth requires significant capital and human flows between sectors and usually leads to price increases. Given an income elasticity of demand of about 1, with rapid economic growth strong price effects can be expected, which means that some of the demand does not materialize in growth of housing stock. In the long term, higher prices will indeed increase supply and lead to a gradual increase in housing stock, but as historical experience shows, this adjustment is not usually smooth. It turns into a boom or a real estate crisis, spectacular and close examples of which are Spain and Ireland, where a significant portion of the resources were directed to building homes that became very expensive, enabling developers to achieve extraordinary profits, but which have now cheapened and are often uninhabited. These flats were financed by mortgage loans on a large scale, and the collapse of the housing market resulted in the collapse of the banking system. This is why the problem of imbalances between supply and demand on this market and the related price developments are important both socially and economically as well as to the financial stability of the state. The related problems, and especially the impact of the so-called wealth effect in the case of housing, are widely studied and commented upon in economic literature.

Catte et al. (2004) focus on the flows between housing wealth and consumption of other goods, and factors which influence price fluctuations in order to assess the stabilizing role of the residential housing sector. Based on an analysis of the estimated marginal propensity to consume housing stock for ten OECD countries, it turns out that the strongest impact on consumption is observed in countries with large and developed mortgage markets. When the value of an apartment grows, the owner is not only subject to the wealth effect, but can borrow against the property and increase consumption by extracting capital from the property. Guerrieri and Iacoviello (2017) stated a similar but opposite relationship for countries with a poorly functioning mortgage market. The rise in prices causes a reduction in the remaining consumption there, because due to the lack of easy access to credit there is no wealth effect, and apartment buyers need to save much more.

An apartment as a heterogeneous good is the sum of its attributes that determine the degree to which the housing needs are met. Consequently, the choice of housing is always the choice of the characteristics of the apartment (Rosen 1974), which makes the supply and demand structure, and especially their changes, an important equilibrium factor in the market. The less affluent will want to buy a smaller, poorer quality apartment, but when their economic situation improves, they will be willing to devote a large part of their income to improving their housing situation. This behavior also translates into an imbalance between supply and demand in different phases of the business cycle (André 2010; Caldera Sánchez and Johansson 2011). O'Sullivan (2011) claims that there are three groups of households with high, medium and low income. New, high quality apartments are usually purchased by higher income households. However, the standard of apartments that households leave in the market falls, and these apartments are purchased by middle-income consumers. The lowest quality apartments are purchased by households with the lowest income. As time goes by, the status of entire estates, streets or even districts changes.

The business cycle is reflected in fluctuations in demand for apartments of different sizes. Starting from the inflection point, when the economy comes out of a downward phase, income growth encourages households to shift to larger housing. In the literature this process is called filtration (Górczyńska 2014; O'Sullivan 2011; Ortalo-Magne and Rady 1999, 2006). Small apartments start to become cheaper, while large apartments become more expensive. Developers notice demand for large apartments and start to build them. The average size of newly completed apartments rises. At a certain stage the growth phase of the economy reaches an end and the slowdown phase begins. Households feel at risk of losing their jobs and relativize their housing expectations. Those who were planning to buy an apartment choose a smaller one, and owners of large apartments start to downgrade to smaller apartments, which are cheaper to maintain. A shortage of small flats appears, and large flats, which developers continue to sell to the market, must either become cheaper or they will not find buyers. Developers start to adjust projects in progress (if possible) in order to build smaller flats. As the economy comes out of the trough and starts to enter the growth phase, demand once more moves towards more expensive and larger homes. A new investment cycle begins which again follows the above-mentioned path. Additional shocks such as global crises, supply

shocks (for example due to accession to the European Union or other organizations) or shocks caused by significant fiscal or institutional changes compound this normal cycle.

The long-term relationship between GDP and the housing stock is influenced by medium-term cyclical changes. The first synchronized and global cycle in the residential housing markets led to substantial overproduction of housing stock in highly developed countries. The consequence of this overproduction was the real estate crisis, which was deeper, the higher the level of oversized housing. Despite all of this, the long term relationship changed only slightly from 2001 to 2011.

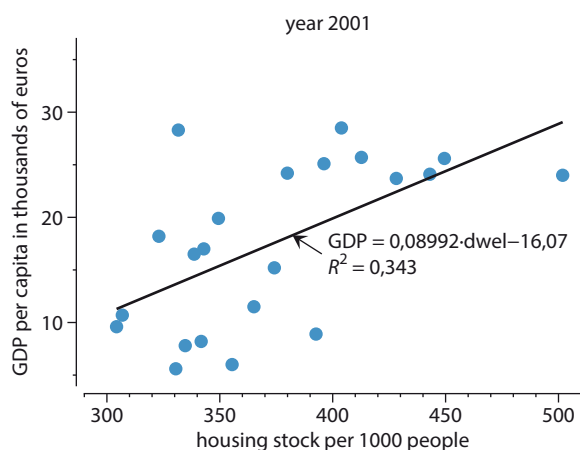


Fig. 1. Housing stock per 1 000 people and GDP per capita (in PPS) in selected European countries in 2001

Source: Own elaboration based on data published by Eurostat in 2017

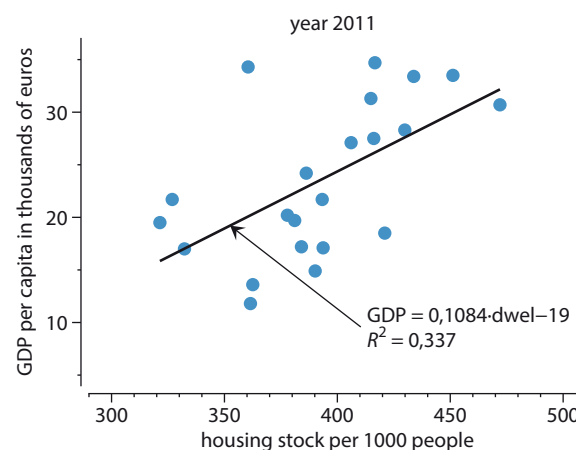


Fig. 2. Housing stock per 1 000 people and GDP per capita (in PPS) in selected European countries in 2011

Source: Own elaboration based on data published by Eurostat in 2017

1 The housing situation in regions of the European Union

An empirical analysis of a total of 1 421 European regions,¹ according to the NUTS nomenclature,² shows that on average in Europe there are approximately 415 inhabited housing units per 1 000 inhabitants. The biggest deviations from the average number of dwellings (i.e., domestic diversification, occur in Germany, Poland, and Slovakia). In these countries, internal diversification is often greater than differences between countries, as evidenced by the local nature of these markets and the difficult market equilibrium process. The study confirms that in the long run, wealth measured by the level of GDP and income is the major driver of housing supply and the housing situation. However, the high dispersion shows the significant impact of the remaining factors discussed.

In Central and Eastern Europe, there is a visible shortage of dwellings taking into account GDP, which is due to historical reasons (a significantly lower level of development, further compounded by the communist system). Housing demand which is not satisfied by supply generates rapid price increases, especially in areas of dynamic economic growth. In Poland, the average is only about 326 dwellings and it is the smallest of the analyzed countries. Only in Warsaw and in Łódź is this indicator higher than the European average. The shortage translates, in the case of Poland, into relatively high prices in major cities (high developer profits) and faster price increases in development areas. The high saturation of apartments coupled with high incomes is the cause of high prices on this market.

1. The study of the number of dwellings and houses per 1000 inhabitants was carried out based on the 2011 Eurostat data on European regions. The analysis takes into account regional factors—i.e., the region's income measured as the ratio of GDP per capita of the region to the EU average as well as the factors concerning the whole economy. These factors are the share of the population living in cities, the unemployment rate and two zero-one variables describing the country's membership in Central and Eastern Europe and Southern Europe.

2. Classification of Territorial Units for Statistics, with NUTS 3 ranging from 150 thousand to 800 thousand residents.

One of the key measures for an assessment of the quality of living conditions is access to housing of a sufficient size for the household³ (Rybkowska and Schneider 2011). Therefore, lower saturation of housing translates into worse housing conditions and sharper social conflicts. In 2009, 8,0% of the EU population lived in overcrowded housing.⁴ The rate of overcrowding is over 50,0%, or fluctuates near this value, in most Central and Eastern European countries (Hungary—55,0%, Romania—55,3%, Latvia—57,7%), while the lowest rates are observed in Cyprus (1,0%) and in the Netherlands (1,7%). In regions where the share of the population at risk of impoverishment is higher (i.e., the disposable income is less than 60,0% of the national median income), there is a

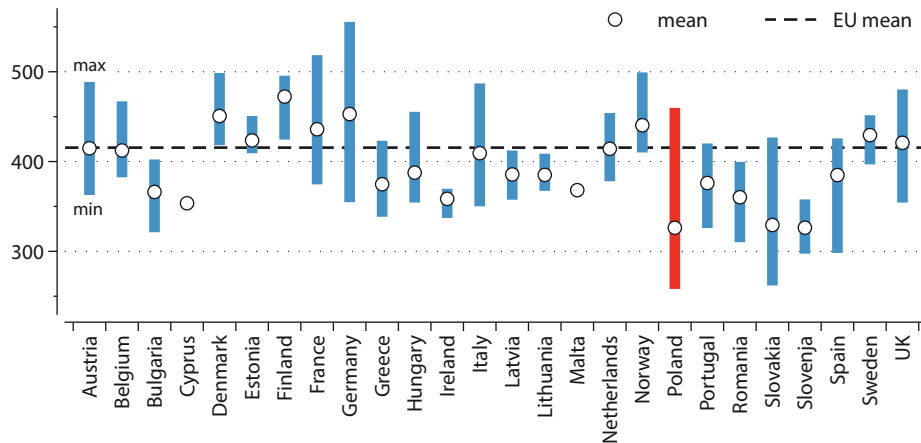


Fig. 3. Number of inhabitants per 1000 people in regions of selected countries of Europe (regions singled out according to the NUTS 3 classification)

Source: Own elaboration based on data published by Eurostat in 2017

Note: Diversification in individual regions is linked to the variation in income in these regions. In the case of Cyprus and Malta there is only one region.

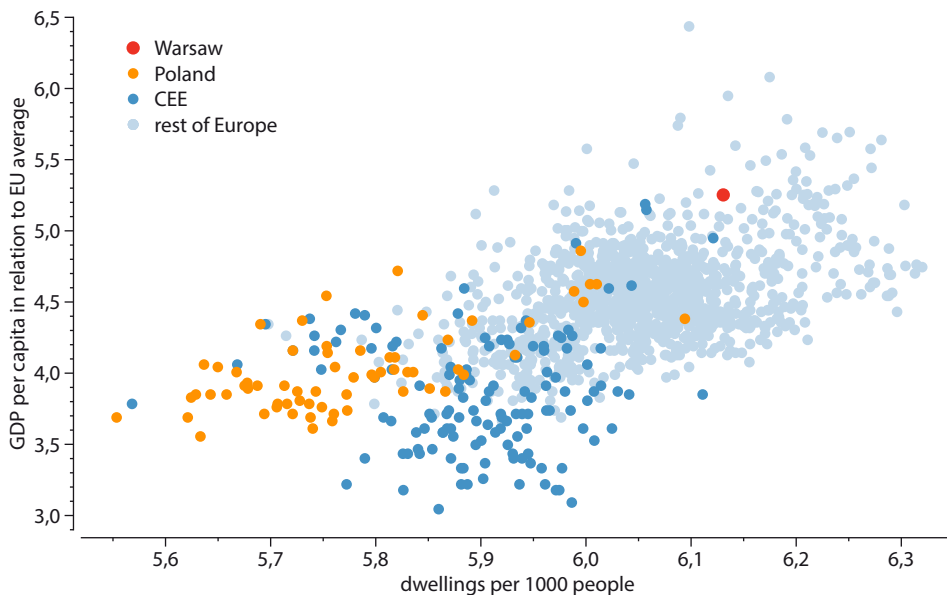


Fig. 4. Number of dwellings per 1000 people in NUTS 3 regions and GDP of the region per person (in relation to the EU average) in regions of selected countries of Europe in 2011

Source: Own elaboration based on data published by Eurostat in 2017

3. Housing conditions are considered overcrowded if the household does not have at their disposal a minimum space designated as follows: one room for the household, one room for a couple in the household, one room per person aged 18 and over, one room for two persons aged 12–17 years old of the same sex, one room for two persons aged 12–17 years not included in the previous category, one room for two children under 12 years old.

4. [In the journal European practice of number notation is followed—for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style).—Ed.]

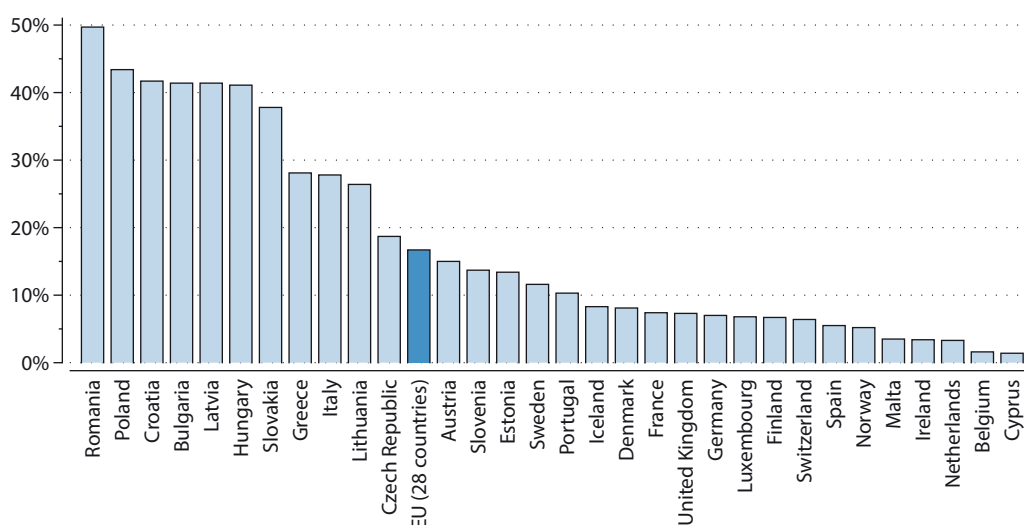


Fig. 5. Overcrowding* in selected European countries in 2015

Source: Own elaboration based on data published by Eurostat in 2017

*The percentage of the population living in an overcrowded household. A person is considered as living in an overcrowded household if the household does not have at its disposal a minimum of rooms equal to: (1) one room for the household, (2) one room by couple in the household, (3) one room for each single person aged 18 and more, (4) one room by pair of single people of the same sex between 12 and 17 years of age, (5) one room for each single person between 12 and 17 years of age and not included in the previous category, and (6) one room by pair of children under 12 years of age.

higher probability of living in crowded housing. The largest share was recorded in Hungary (75,4%), in Poland (64,9%) and in Romania (64,8%), while the lowest was in Cyprus (2,7%), Spain (5,1%), the Netherlands (5,5%) and Malta (5,6%). In Luxembourg, the Netherlands, Germany, Belgium and Norway, the share of people at risk of poverty living in overcrowded dwellings is three times larger than the population as a whole.

Problems related to assessment of housing availability in international research

In order to better compare the housing situation in Poland against the background of the European Union, it is necessary to describe the main measures used and to be aware of the variation in the measures and definitions used in relation to living conditions and housing wealth in different countries. An apartment is a heterogeneous good, thus generating heterogeneous housing services, which are most often measured by indicators of quality and quantity of the housing stock as well as the housing situation (average and variance).⁵ Such a measurement of the value of the real sphere, without interference by the sphere of regulation (prices, financial sector) does not, however, provide information on the liquidity of this market and the consumer's possibilities of choice (i.e., real matching of housing needs to the housing stock). In this area, measures of housing availability are often used to show the possibility of purchasing housing stock or a stream of services (rent) on the basis of data, local incomes, prices, rents or available credit. In this area, rich international literature is available, and the issues involved have been discussed over the last 40 years.

Abeyasinghe and Gu (2011) state that the most commonly used measures of housing availability are usually short-term indicators that compare current income with housing prices or housing costs. It is worth mentioning in this context the measures of the housing level in relation to the GDP of European countries, measured in 2005 and 2010.⁶ In 2005, when there was strong economic growth, there was a strong positive relationship between the level of GDP and the number of apartments.

5. See: Potrzeby mieszkaniowe w Polsce. Dostęp do mieszkania w kontekście polityki prorodzinnej. Ekspertyza opracowana na potrzeby Zespołu ekspertów ds. wypracowania rekomendacji w zakresie polityki rodzinnej przy Kancelarii Prezydenta RP. By I. Herbst, Warszawa, 2013, [a:] https://www.prezydent.pl/download/gfx/prezydent/pl/defaultopisy/3691/1/1/potrzeby_mieszkaniowe_w_polsce.pdf.

6. See: Figures 4 and 5 in: Report on the situation in the Polish residential and commercial real estate market in 2011. National Bank of Poland, the Economic Institute in collaboration with regional branches, Warsaw, August 2012, [a:] http://www.nbp.pl/en/publikacje/inne/annual_report_2011.pdf.

In 2010, after the global crisis, due to which the GDP of the most developed countries fell, this relationship was virtually negligible. This problem was discussed earlier. However, Myers et al. (1996) raise the issue of overcrowding in their study. This is probably a stable measure over time, but not always comparable internationally. It indicates that it is worth analyzing the number of people per square meter. of apartment because the size standards differ greatly from country to country.

2 Analysis of housing availability in Poland compared to Europe

Based on the results from the European regions, we analyze the problem mismatches of housing to income levels in Poland. The analysis first focuses on the housing situation in Poland, going on to describe the problem of the structural mismatch of housing supply to the demand for housing.

2.1 The housing situation in Poland

The housing stock in Poland differs, both quantitatively and qualitatively, from that of EU countries with a higher GDP. Over the last twenty years in Poland there has been a change in perception and the way of financing housing. There has been a transition from a highly regulated housing sector to a liberalized market, where demand is met according to free market principles. The change in financing housing and the supply of housing loans has become an important impetus that has significantly improved housing standards in Poland over the years. The main factor increasing demand for housing was the growing availability of credit as a result of rising incomes and access to denominated loans. In Poland, a gradual improvement of the housing situation is observed, and the level of the indicator the number of dwellings per 1000 people has been improving over the years. In recent years, we have seen an increase in the number of square meters. of housing, and during the boom of 2005–2007 their value increased rapidly, which resulted from the price increases (fig. 6 and 7).

An analysis of the spatial distribution of the number of dwellings per 1000 inhabitants (fig. 8), housing prices (fig. 9), income (fig. 10), and credit availability (fig. 12) in 16 voivodship capitals shows that these values are strongly and positively correlated. High-income regions attract a large number of workers, so housing prices grow and are higher than in smaller provincial towns. At the same time, developers see significant potential for gaining new customers and so they increase housing construction. For this reason, the number of dwellings per thousand inhabitants is higher in more affluent cities.

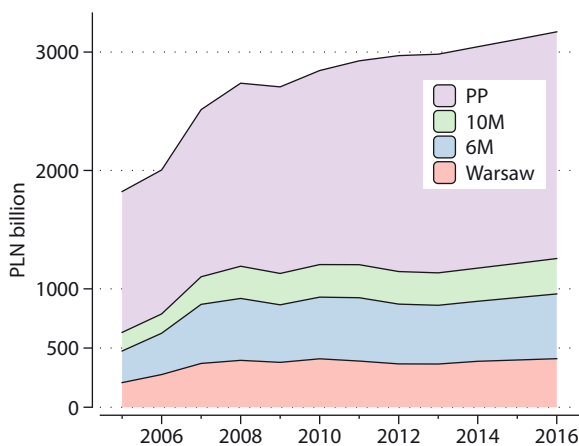


Fig. 6. Estimated value of the housing stock in Poland

Source: Own elaboration based on Report on the situation in the Polish residential and commercial real estate market in 2016. NBP [forthcoming]

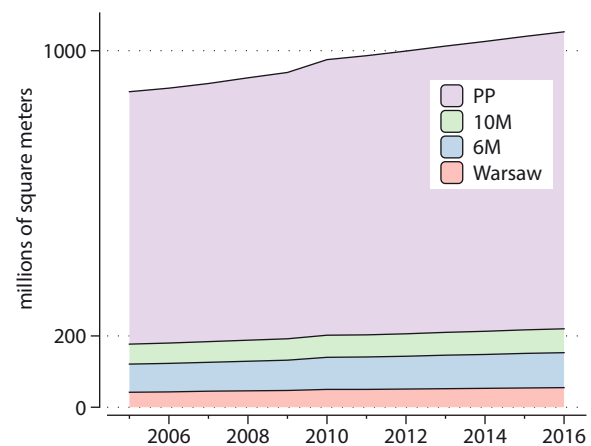


Fig. 7. Surface area of housing stock in Poland

Source: Own elaboration based on Report on the situation in the Polish residential and commercial real estate market in 2016. NBP [forthcoming]

Note: 6M—Gdańsk, Gdynia, Kraków, Łódź, Poznań, Wrocław; 10M—Białystok, Bydgoszcz, Katowice, Kielce, Lublin, Olsztyn, Opole, Rzeszów, Szczecin, Zielona Góra; PP—remaining Poland. The estimate is based on Central Statistical Office of Poland (GUS) data on the surface area of the housing stock in particular centers. This housing stock was multiplied by the transaction prices (average from the primary and secondary markets) in 16 towns, in remaining Poland by the replacement prices

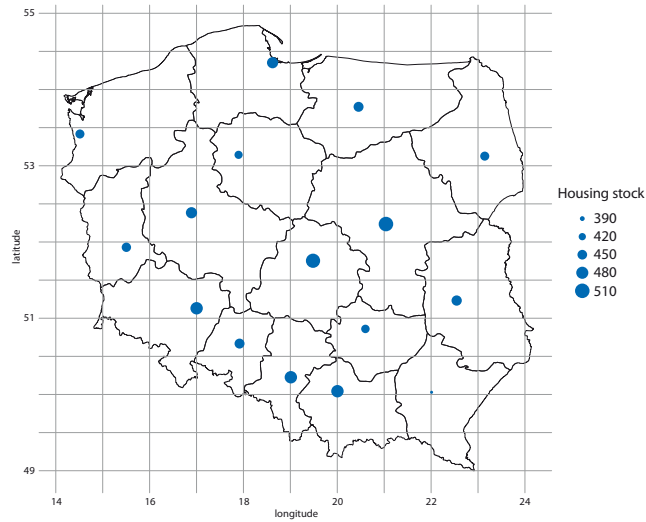


Fig. 8. Spatial distribution of the number of dwellings per 1000 inhabitants in Poland as at the end of 2015
Source: Own elaboration based on data published by Central Statistical Office of Poland in 2015

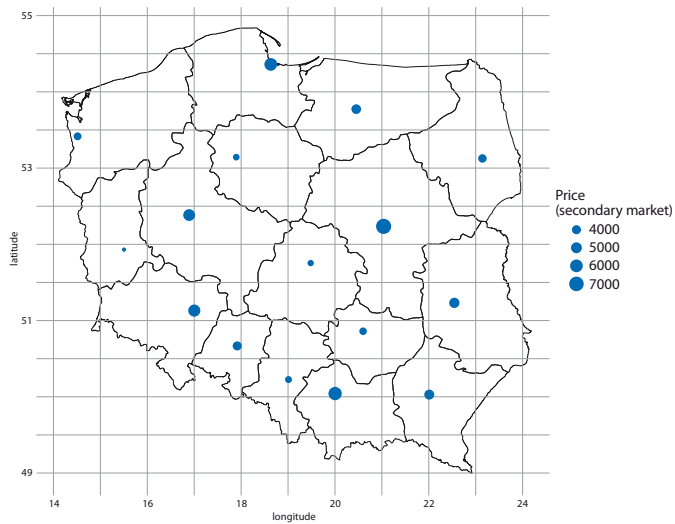


Fig. 9. Spatial distribution of the price (in PLN per square meter) of dwelling on the secondary market as at the end of 2015.

Source: Own elaboration based on data published by Central Statistical Office of Poland in 2017

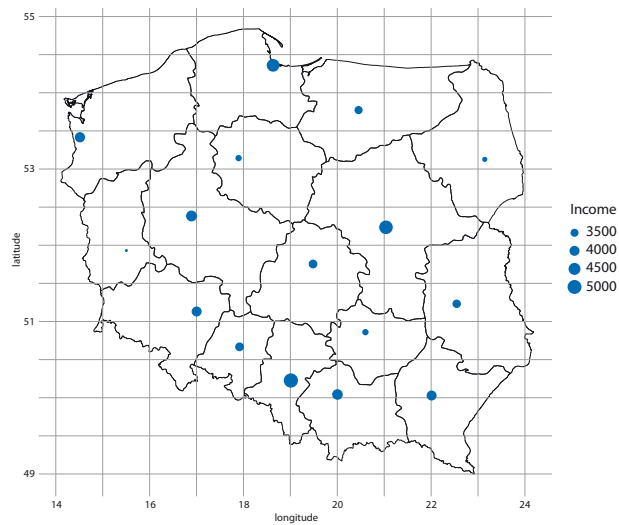


Fig. 10. Spatial distribution of remuneration in the enterprise sector in Poland as at the end of 2015 (in PLN per month)

Source: Own elaboration based on data published by Central Statistical Office of Poland in 2015

When analyzing spatially the housing situation of households, the qualitative characteristics (standard of housing) and their surface area should also be taken into account. The local variation in housing stock in Poland is due to historical reasons. In smaller towns and in rural areas, a large share of the housing stock is made up of single family houses, which inflates the surface area per capita. Large residential properties are also characteristic of old towns unspoiled by war, but due to the dense population, the saturation index is not so favorable here.

The high shortage of housing stock affects the very low labor mobility in Poland. It lowers the efficiency of the restructuring processes of the economy and weakens the growth rate. Without a significant increase in new housing construction, this efficiency will be low and the differences in the unemployment rate and social exclusion will continue to persist across individual regions.

2.2 Housing availability in Poland

In Poland, since the early 2000s, the general law of the housing market has been working towards the equalization of income and credit availability in individual towns through housing prices. The specificities of the local markets are factors working in the opposite direction. Consequently, lower-income cities are generally characterized by lower standards of housing and lower prices. Between 2000 and 2016 there was a steady increase in housing availability and availability of loan-financed housing. A quarterly analysis of the availability of square meters of housing per average salary is shown in figure 11. It can be observed that after sharp price increases in 2006–2007, which caused a decline in availability, housing availability in large towns is steadily increasing. This is a result of increased incomes accompanied by stable housing prices.

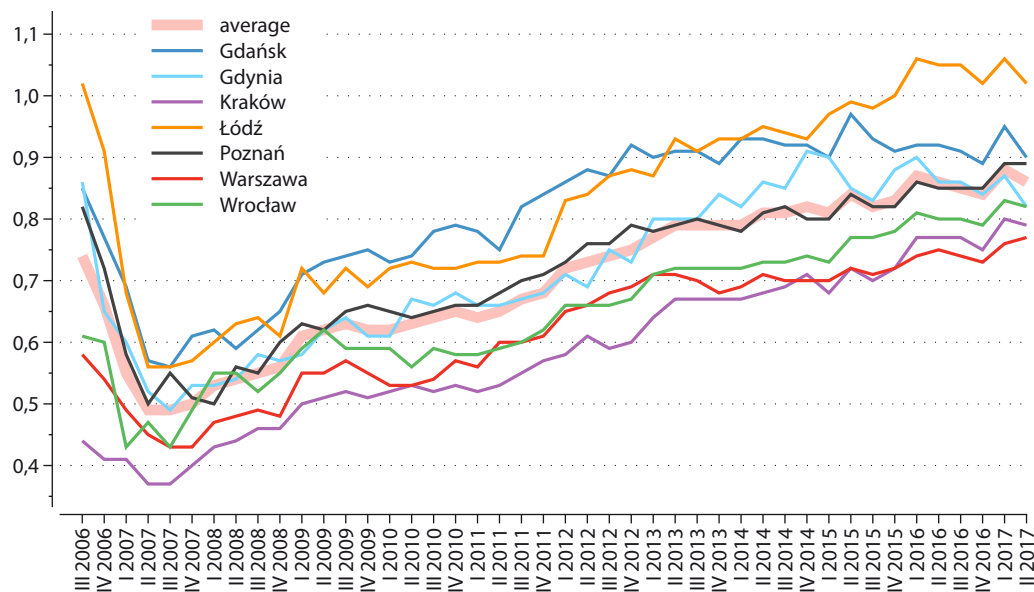


Fig. 11. Estimate of housing availability* in square meters per average salary in the corporate sector

Source: Own elaboration based on data published by Central Statistical Office of Poland and Narodowy Bank Polski (NBP) in 2017

*Housing availability—a measure of the potential possibility of purchase of surface area of a dwelling in the transaction price for the average monthly wage in the enterprise sector in a given city. It expresses the number of square meters of available dwellings available at the average wage in the enterprise sector in a given city and the average transaction price in a given market (40% from the primary market and 60% from the secondary market)—definition originate from the publication of NBP.

Credit availability in individual voivodship towns (fig. 12) results from the level of interest rates and income. Because interest rates in Poland are practically the same throughout the country (the reference rate is always the same and margins are small), differentiation of income translates into credit differentiation. This, as well as income differences, translates into the strength of demand and, consequently, housing supply, as described above.

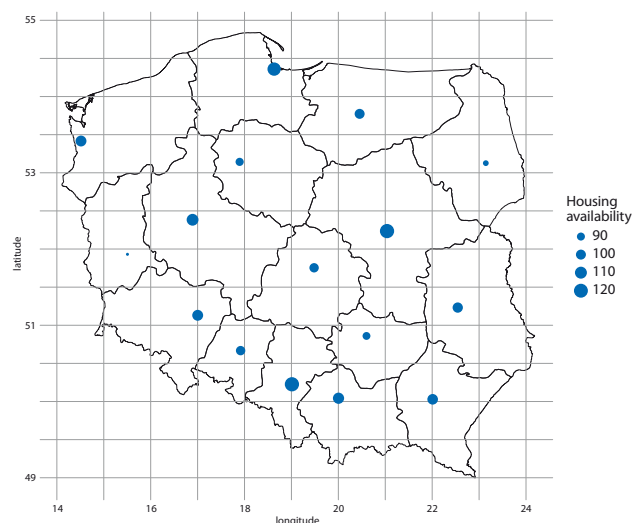


Fig. 12. Spatial distribution of the availability of housing credit in Poland as of the end of 2015.

Source: Own elaboration based on data published by Narodowy Bank Polski in 2017

Note: The availability of housing credit is calculated as a multiple of monthly income less the social minimum that is constant for the whole country

2.3 The structural imbalance of demand and supply in the housing market and its consequences

In Poland, there is an imbalance between supply and demand in the housing market in the long run. This imbalance is the result of a shortage of housing, especially in large agglomerations, that has lasted for several years. Large agglomerations offer jobs, as well as education and entertainment, thus attracting residents from smaller centers. In addition, wage growth encourages current residents to improve their housing situation. As the old stock mainly consists of smaller flats, large flats can only be supplied by new construction. The multi-family housing market began to take on importance in Poland practically only after 2000 and has now almost completely displaced cooperative housing. Developers, willing to take on risk and make big profits, bought up various tracts of land and turned them into construction sites, which allowed them to build new housing estates relatively quickly. The desire for profit significantly accelerated the construction process, and it should be noted that in the boom years customers mainly bought construction contracts which were only later to be completed, in other words, holes in the ground. The basic models of the residential property market (such as the short- and long-term model, or the model of DiPasquale and Wheaton) describe the impact of demand changes on this market. Housing is capital that generates housing services, so changes in income, demographic situation or consumer preferences can have a significant impact on the demand for these services. Given the fact that the housing stock is related to the financial sector (among others, through loan financing and alternative costs of investment in housing), changes in the financial market affect changes in fundamental determinants in the real sphere. Growing demand for rigid short-term supply—housing stock—usually produces price effects. Thanks to new development projects, which after several years supply the market, supply becomes more flexible. In the opposite situation, when new investments are not made, there is a gradual depreciation and deterioration of the housing stock, unless general repairs and modernization are carried out.

When along with the rapid rise in wages there is no rapid increase in housing investment, there is an increase in demand for and consumption of all goods, including housing (real consumption rises in proportion to rising incomes). Too little supply of housing causes an increase in housing prices and forces a substitution effect shifting spending towards remaining consumption. In a situation of flexible housing demand, consumers will respond to rising housing prices by a reduction in housing demand. The consumption of other goods will increase, which will translate into a rise in real consumption. Assuming rigid housing demand, the effect of rising demand will translate into an increase in residential property prices. A slight increase in household consumption will be due

to an increase in other consumption. The losses that consumers will incur will become the profits of the producers of housing. As a consequence of the structural lack of residential property on the market, high housing prices and excessive demand for other consumer goods will be observed. This situation is beneficial for real estate developers, especially if they have banks of building land.⁷

Overvalued housing prices are, in turn, a threat to the stability of the financial sector. The value of housing that has been overvalued by valuation surveyors may decline in the long run. A shortage of housing and high prices can cause a housing boom. It is expected that even if new flats are built that will satisfy demand, their prices will not return to their previous real levels, which could cause losses in the financial sector (Łaszek and Olszewski 2014).

Conclusions

This article presents the differences in the saturation of housing stock in Poland and in European Union countries. Based on the analysis of the cited figures and maps, it can be seen that in the case of European countries, the countries of Central and Eastern Europe are clearly deficient in housing. Also, the quality of this housing stock is worse in comparison with Western European countries, which would further reduce the effective housing stock available to households.⁸ In Poland, the largest voivodship towns are characterized by more favorable indicators of housing stock, but only in Warsaw and Łódź are these indicators comparable to the EU average. It is worth noting that the quantitative analysis of housing stock is burdened with large errors, as the qualitative differences of dwellings are not taken into consideration.

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