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Contents

Introduction

The Department of Regional Economy at the Faculty of Economics, Management and Tourism of Wrocław University of Economics organized yet another scientific conference entitled: "Local and regional economy in theory and practice". It was already the 23rd conference held on 23-25th September 2015 in "Chata za wsią" hotel in Mysłakowice near Jelenia Góra.

The conference was attended by the representatives of national and international scientific circles, regional and local government structures, and also other entities representing business practice and interested in the problems of local and regional economy, as well as PhD students. Over 80 participants of the conference arrived from over 30 national and foreign scientific centres and institutions to present papers and posters.

The subject matter of the conference covered the following areas: local and regional development, local and regional governance, application of quantitative methods in regional studies, partnership in local and regional development, directions of research in local and regional development, cooperation between academic centres and local government units.

The conference contributed to establishing more extensive and stronger relationships, created within the framework of the constructed platform for the exchange of scientific and practical experiences (the conference has been held cyclically since 1992) at the local, regional, national and international forum. The discussions were focused on the dissemination of research results, the exchange of experiences and the establishment of a discussion forum covering both theoretical and practical aspects of local and regional development. They also resulted in more extensive cooperation between academic centres, local government units as well as research and development centres, including the cross-border ones.

The conference is cyclically attended by the representatives of science from Poland and abroad. So far we have hosted e.g. the research workers representing academic centres from Ukraine, the Czech Republic, Italy, Sweden, Germany, Austria, Denmark, Slovakia and also the representatives of business practice, e.g. city presidents and mayors, village heads, county governors, presidents of regional development agencies or of local enterprises, etc.

As a result of the organized conference, the hereby publication presents the collection of thematically selected articles in English covering the broadly understood problems of local and regional economy. Its authors represent the following scientific centres: Warsaw School of Economics, University of Łódź, Gdańsk University of Technology, Koszalin University of Technology, University of Warmia and Mazury in Olsztyn and Wrocław University of Economics.

We are most grateful to the conference participants for the joint meeting and we do hope for further cooperation.

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EFFECT OF PROPERTY TAX ON VOIVODESHIP CAPITAL RESIDENTS' HOUSING MARKET DECISIONS

WPŁYW POLITYKI PODATKOWEJ MIAST WOJEWÓDZKICH W ZAKRESIE PODATKU OD NIERUCHOMOŚCI NA DECYZJE ZAKUPOWE NA RYNKU NIERUCHOMOŚCI MIESZKANIOWYCH

Summary: The paper investigates the issue of property tax in the context of housing stock in voivodeship (province) capitals. Its main purpose is to assess the effect of property tax policies implemented by voivodeship authorities in 2009-2014 on the buyers'/owners' decisions concerning the size of a residential property. This objective is reached in four stages: 1) the outline of a role of property tax in local budgets; 2) the review of property tax policies; 3) the characteristics of dwelling conditions and related spending; 4) the analysis and assessment of the relation between property tax policies and the average usable floor area of flats in the existing and newly built housing stock in voivodship capitals. The study results reveal that property tax policies had an insignificant effect on the buyers' decisions in terms of the property size.

Keywords: real property tax, living conditions, multidimensional comparative analysis.

Streszczenie: Publikację poświęcono problematyce podatku od nieruchomości w miastach wojewódzkich w kontekście zasobów mieszkaniowych. Celem głównym jest ocena wpływu prowadzonej przez miasta wojewódzkie w latach 2009-2014 polityki w zakresie podatku od nieruchomości mieszkaniowych na decyzje nabywców/posiadaczy własnego „m" dotyczące wielkości posiadanego mieszkania. Cel główny osiągnięto w czterech etapach: 1) przybliżając znaczenie wpływów z podatku od nieruchomości w budżetach badanych miast; 2) omawiając politykę podatkową w zakresie podatku od nieruchomości; 3) charakteryzując warunki oraz wydatki mieszkaniowe; 4) poddając analizie i dokonując oceny zależności pomiędzy polityką podatkową w zakresie podatku od nieruchomości a prze-

ciętną powierzchnią użytkową mieszkania w zasobach mieszkaniowych oraz oddawanych do użytkowania w poszczególnych miastach. Wyniki badań wskazują, że polityka podatkowa w omawianym zakresie miała nieznaczny wpływ na decyzje nabywców dotyczące wielkości kupowanego mieszkania.

Słowa kluczowe: podatek od nieruchomości mieszkaniowych, warunki mieszkaniowe, miasta wojewódzkie.

1. Introduction

The problem of residential property taxing is a vital issue in the state and local government policies aimed at encouraging sustainable development. The importance of this problem is founded on two main factors. First of all, the residential property plays a vital social role as it meets basic, constitutionally guaranteed[1] human needs. Secondly, similarly to the remaining types of real property (commercial, industrial, agricultural, forest or special purpose), the residential property has plenty of economic functions, such as capital investment, economic (strong bonds between residential properties and other industries), or fiscal function (feeding the national and local budgets with revenue from taxes and fees) [Kucharska-Stasiak 2006]. Just like in many countries that respect the idea of local governments, in Poland, besides the state being the national housing strategy regulator, it is the *gmina* (the elementary local government unit) that is the leading actor of the housing policy aimed at satisfying the community housing needs within the framework of its responsibilities as stated in the Act of 21 June, 2001 on the protection of tenants' rights, municipal housing reserves and on the change of the Civil Code [Act of 21 June...]. One of the instruments of the local government housing policy is the local tax policy with its main component being the property tax levied according to the provisions of the Local Tax and Fee Act of 12 January 1991 [Local Tax...]. The existing Polish property tax depends on the property size[2], i.e. it is chargeable on the land plot size or floor area of buildings or their parts in square meters[3]. The property tax rates for land and buildings or their parts are set annually by *gmina* councils in way of relevant resolutions. However, the rates cannot exceed the ceiling values announced every year by the Ministry of Finance in the Monitor Polski RP [Borszowski 2011]. When deciding the rates of

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[1] See more in: Constitution of the Republic of Poland of April 2, 1997, Dz.U. No 78, item 483 as amended, art. 75.

[2] Apart of property tax systems based on the size criterion, the countries in Central and Eastern Europe have adopted the systems based on the property value (*ad valorem, cadastral duty*) that are also used in Western Europe, Canada, Australia and New Zealand. See more: [McCluskey, Bell 2008, p. 8; Głuszczak, Marona 2015, pp. 90-91].

[3] As stated in the Acts on income tax, it is only in the case of buildings used for business activity purposes that the tax is based on the value used to calculate the depreciation write-downs.

a residential property tax, apart from the fiscal issues (i.e. maximising their budget revenues), the local authorities also have to take into consideration some social issues (housing as a staple, the local government's responsibility to support its residents' pursue to obtain and maintain their own home). By giving up the ceiling rates, on the one hand they deprive themselves of some part of revenue, but on the other hand, they make the local area more attractive for potential residents, which in the longer perspective translates to the development of local economy and contributes to increased revenue coming from other sources, mainly in a form of a local income tax, a tax on civil law transactions, perpetual usufruct fees, etc.

The paper analyses the property tax related income policies implemented by voivodeship capitals between 2009-2014, with a particular focus on annual rates of taxes on the usable area of residential buildings and land. The main purpose of this study is to assess the effect that property tax rates adopted in voivodeship capitals have on the residential property buyers'/owners' decisions concerning the size of their homes. The correlations among the examined variables are identified by means of the Spearman correlation coefficient. The correlation is examined with the use of the multidimensional comparative analysis, which allows for distinguishing groups with similar dwelling conditions categorised according to the average usable floor area in the existing housing stock or in the ones to be completed over the subsequent years of this analysis. The study is based on statistical data coming from the Central Statistical Office (www.stat.gov.pl) and the Eurostat, as well as on data published on BIP websites of individual voivodeship capitals (www.bip.gov.pl), including the resolutions on local property taxes adopted in 2009-2014.

2. Property tax revenue in budgets of voivodeship capitals

In the majority of Polish *gminas* the property tax, being the basic local tax, is a principal source of their own revenue. According to the GUS, in the period of 2009-2014 the property tax revenues in voivodeship capitals grew from PLN 3.267 billion in 2009 to PLN 4.513 billion in 2014, which meant the 38% rise in comparison to 2009. With regard to the volume of property tax revenue in 2009-2014, Kraków was a leading city with PLN 5.860 billion, which constituted over 25% of the total revenue reported by 16 voivodship capitals under this analysis. Łódź was ranked the second with the revenue of PLN 2.280 billion (10% of the total), followed by Warszawa with PLN 2.091 billion (9% of the total). The lowest property tax revenue was reported by Kielce (PLN 428.5 million) and Bydgoszcz (PLN 325 million).

The average proportion of tax property revenues in the cities' own revenue was 18.43%. In individual gminas its average annual values varied from 11% in Warszawa, 13% in Wrocław and 16% in Kraków to 21% in Gdańsk, 22% in Bydgoszcz and 23% in Rzeszów. Over the period of study the property tax revenue per capita grew from PLN 434.33 in 2009 to PLN 595.12 in 2014, meaning the rise by 37%. The city enjoying the highest revenue per capita was Gdańsk with PLN 828.03 in 2014

and the annual average over the six-year period at PLN 680.55. It was followed by Katowice (PLN 523.33 per capita) and Poznań (PLN 587.65 per capita). The lowest property tax revenue per capita was recorded in Lublin (PLN 437.13) and Białystok (PLN 414.84).

3. Residential property tax policies in voivodeship capitals

Local authorities have a broad range of competencies at their disposal to create their tax policies with regard to residential property. As stated in the Local Tax and Fee Act, as a part of their financial autonomy *gminas* have been granted competencies in three areas: 1) the capacity to set their tax rates within the brackets announced annually by the Ministry of Finance, 2) the capacity to gradate tax rates depending on the property location, type of building, its technical condition and age, 3) the capacity to grant tax exemptions relating to property tax. Additionally, the executing authorities (a head of a *gmina*, town mayor or city president) are competent to: 1) set the amount of tax payable by individuals by way of a decision, 2) remit, spread taxes into instalments and defer tax payments [Kornberger--Sokołowska 2001; Miszczuk 2009].

The conducted analysis reveals that residential tax policies implemented by the local governments of 16 voivodeship capitals between 2009 and 2014 varied considerably. The lowest rates of tax on land designated for housing investments were set in Olsztyn and Rzeszów at the level below 50% of ceiling rates (47% and 49%, respectively). However, in Olsztyn a clearly upward trend was observed: from PLN 0.10 in 2009 to PLN 0.31 in 2014, which meant the 210% rise. On the other hand, in Rzeszów the local authorities were rather reluctant to increase the tax rates, rising them by 16% from PLN 0.19 in 2009 to 0.22 in 2014. Other cities with more liberal property tax rates included Opole, Zielona Góra and Kraków. In contrast, Poznań and Łódź set their property tax rates at the highest possible level: PLN 0.37 in 2009 and PLN 0.46 in 2014. Warszawa, being the third city in the ranking, adopted the ceiling rates between 2010-2014, raising them from 81% in 2009. Gdańsk, which was ranked the fourth city, followed the similar policy. When analysing the property tax policies in the voivodeship capitals, it should be concluded that with the passage of time the disproportions among the cities in terms of the applied property tax rates were gradually decreasing (Fig. 1).

When looking at the tax rates on residential buildings and their parts one can observe considerably smaller differences among the cities. Three cities, Gdańsk, Poznań and Warszawa, used the ceiling rates throughout the whole analysed period of time. The group of cities using tax rates approximating the maximum level included Łódź, Białystok, Szczecin and Bydgoszcz. The lowest rate at 62% was reported by Zielona Góra, followed by Opole with the average of 82% of the ceiling rates. Other cities that adopted relatively low tax rates were Rzeszów, Kielce, Olsztyn and
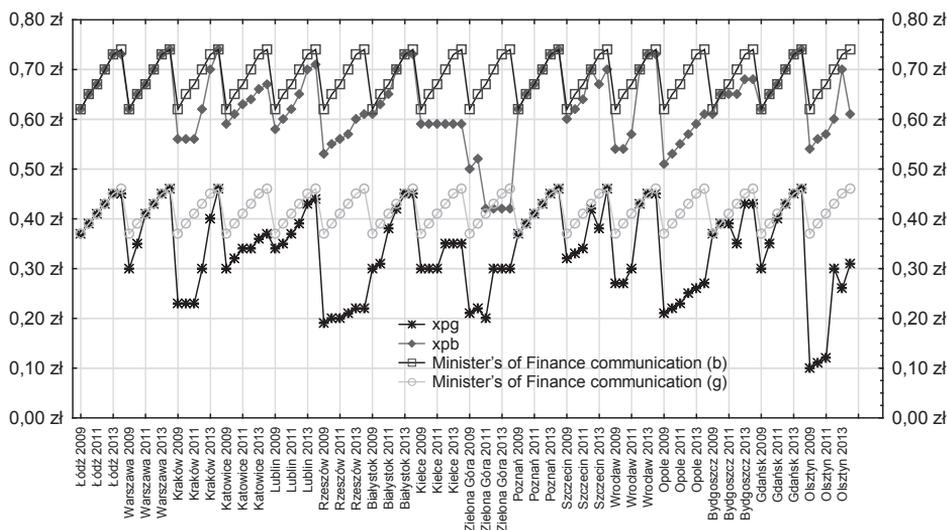
Figure 1. Property tax rates for land designated for housing purposes and for residential buildings (or their parts) in voivodeship capitals in 2009-2014

Source: own study on the basis of BIP data processed by means of *Statistica 12 of StatSoft. Inc firm*.

Kraków. In contrast to the housing development land, in this respect the disparities among the voivodeship capitals were gradually increasing.

4. Housing conditions in voivodeship capitals

As it has been mentioned in the Introduction to this paper, Article 75 of the Polish Constitution imposes an obligation on the State to create the housing policy that meets the housing needs of all the citizens. Furthermore, the duty to provide for housing needs is transferred onto gminas as stated in the Local Government Act (Article 7.1 Dziennik Ustaw of 2015, item 1484). Therefore, it is not the role of the State to build homes for its citizens, but to create conditions that will make it possible for households (families) to obtain housing according to their financial capacity and preferences. The role of housing in the daily lives of families has been indicated by researchers dealing with the housing markets [Bryx 2001; Łaszek 2006; Nykiel 2011; Zapotoczna, Cymerman 2014], who underline its increasing importance in the household incomes, often being a vital part of their debt. In practice it means that the availability of housing as a staple, i.e. the good that is fundamental for human functioning but at the same time acquired at a very high cost, has been limited by people's financial capacity. Hence, due to its capital intensity it has become a major stimulator for households to economise as well as a generator of home loans [Łaszek

et al. 2009; Zapotoczna, Ostrowska-Dankiewicz 2011]. Undoubtedly, the ownership of a residential property and the mechanisms ruling the housing market impose the additional burden on households incurring the real costs of this ownership, thus affecting people's housing decisions regarding the property size. What is more, the changes in the mentality and lifestyles of the Polish families result in the increase in the number of households that are professionally mobile and for whom housing mobility and the housing maintenance costs have become a priority.

According to the research objective of this study, housing conditions in the voivodeship capitals are compared in terms of the average usable floor area (u.f.a) in the existing housing stock, the average u.f.a. in the stock being put into operation as well as regarding the occupancy ratios.

The analysis of data published by the GUS reveals that the average u.f.a. of housing units in the housing stock of individual cities was changing over the period of 2009-2014. The only exception was Wrocław where the average usable floor area increased by 11.2 m^2 (from 60.2 m^2 in 2009 to 71.4 m^2 in 2010) but remained stable over the subsequent years (Fig. 2). It is important note that according to the GUS the housing unit means both a flat and a family house[4].
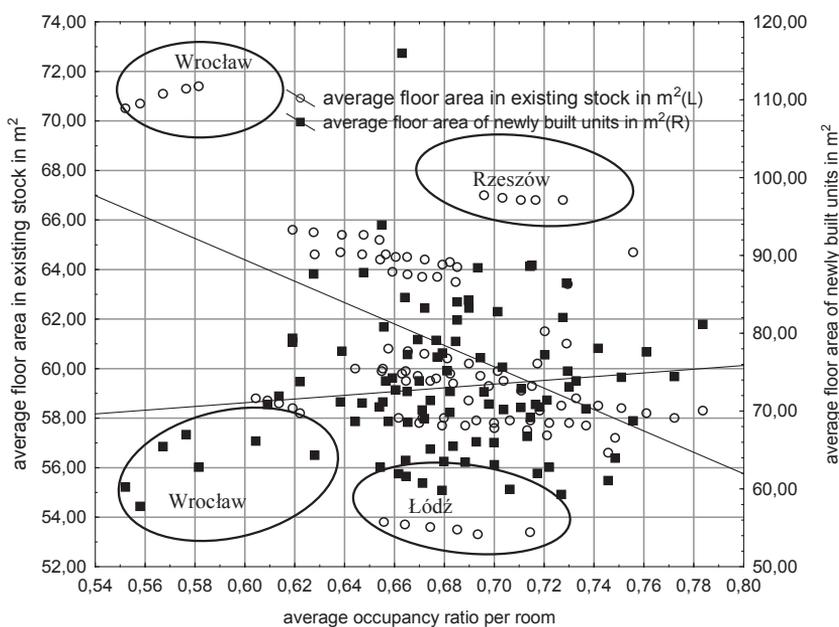
Figure 2. Relationship between the average floor area of the existing and newly built housing stock and their occupancy ratios

Source: own study based on the GUS data processed by means of *Statistica 12 of StatSoft. Inc firm*.

[4] GUS regarded as separate those residential units where a kitchen, bathroom or WC were not shared with other families.

The newly built housing units were much larger than the existing ones, but a simultaneous downsizing trend was seen. Wrocław was the only city where new flats were smaller – in 2013 their average floor area shrank by 13.0 m^2, followed by a further decrease by 10.31 m^2 in 2014 (Fig. 2).

The best housing conditions were observed in Wrocław, both in terms of the average u.f.a. and the occupancy ratio[5]. Wrocław stood out with its lowest ratio and its most significant improvement in this respect from 0.72 in 2009 to 0.55 in 2014. It is worth noting that all the voivodeship capitals saw the decrease in the occupancy ratios. In 2014 only in three cities, i.e. Kielce, Bydgoszcz and Rzeszów, that index exceeded 0.7, which means that with regard to the occupancy ratios the majority of voivodeship capitals met the European standards.
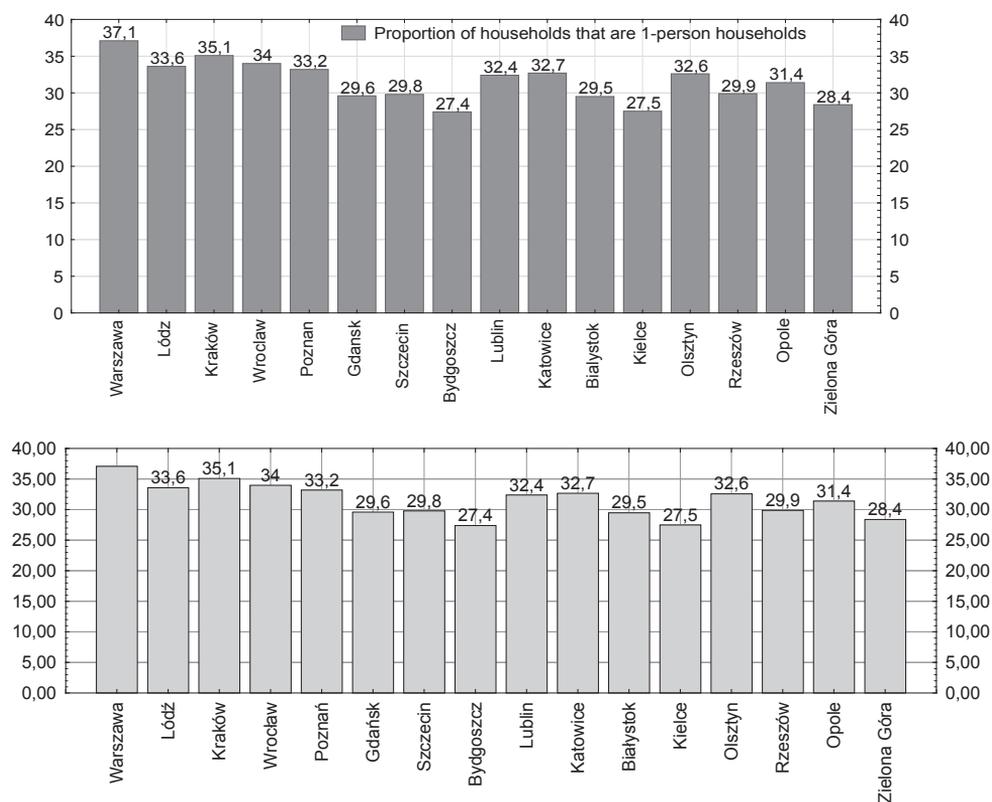
Figure 3. Proportion of households that were 1-person households in 2011

Source: own study based on the Eurostat data processed by means of *Statistica 12 of StatSoft. Inc firm*.

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[5] Occupancy ratio means an average number of tenants per 1 room.

An interesting situation was observed on the residential property market in Łódź. Over the period of study the average u.f.a. of handed over housing units was shrinking (from 88.57 m² in 2009 to 80.82 m² in 2014). Despite that downsizing trend, the usable floor area of the new flats was still considerably larger than in the remaining voivodeship capitals. The largest discrepancies occurred in comparison to Kielce (of 21.55 m²), Kraków (21.05 m²), Wrocław (20.63 m²) and Bydgoszcz (20.88 m²). It should also be pointed out that in the period of this study the existing housing stock in Łódź had the smallest average u.f.a. and the one of the highest occupancy ratios (0.66) in Poland.

The Eurostat data reveal that the considerable majority of Poles are the owners of flats they live in (83.5% in 2014, i.e. by 13.4 pp more than the European Union average). For the purpose of housing need forecasts it has been assumed that every household should occupy a separate housing unit. Therefore, it is beyond any doubt that the growing number of one-person households will have a great effect on the housing demand. Figure 3 shows the percentage of one-person households in the total number of Polish households in 2011.

Every household makes its housing decisions basing on its future income flows. Therefore such decisions are strongly determined by the proportion of housing maintenance costs in family budgets. In 2009-2014 these costs were the second largest expenditure in the Polish family budgets. The average household's monthly costs of maintenance and utilities per person were: in 2009 – PLN188.03, in 2010 – PLN199.88, in 2011 – PLN 210.34, in 2012 – PLN 213.77, in 2013 – PLN 220.56,

Table 1. The average monthly disposable income and the average monthly expenditure on housing in the voivodeship capitals in 2014

Specification	Cities with population of:		
	100-199 thousand	200-499 thousand	500 and more thousand
	Rzeszów, Kielce, Zielona Góra, Opole, Olsztyn	Katowice, Lublin, Białystok, Szczecin, Bydgoszcz, Gdańsk	Łódź, Warszawa, Kraków, Poznań, Wrocław
Average monthly disposable income in PLN per person in a household	1444.05	1583.08	2046.04
Average monthly discretionary income per person in a household	1386.58	1530.29	1974.58
Average monthly expenditure in PLN for housing maintenance and utilities per person in a household	246.85	262.69	318.25

Source: own study on the basis of the GUS publications: [*Sytuacja gospodarstw...*; *Budżety gospo-darstw...*].

in 2014 – PLN 216.73 [*Budżety gospodarstw...*]. According to the GUS data, in 2014 Polish households spent on their housing maintenance 20.1% of the average monthly expenditure per person [*Sytuacja gospodarstw...*]. The average monthly disposable income and the average monthly expenditure on housing in 2014 are shown in Table 1.

For the sake of comparison it is worth adding that more than one third of Greeks (36.9%) and less than one fifth of Danes (18.9%), Germans (16.4%), Dutch (15.7%), Romanians (15.4%), Bulgarians (14.3%) and Hungarians (12.7%) spend over 40% of their equivalent discretionary income on housing. The lowest percentage of households spending more than 40% of their equivalent discretionary income on housing was reported in Malta, Cyprus, Ireland, Finland, France, Luxemburg and Slovenia (where the proportion was smaller than 6%) [ec.europa.eu].

The burden of housing costs on household budgets is determined by many factors, such as: the type of ownership, the size and structure of a household, the size of a housing unit, fixtures and fittings or the economical use of utilities. One of the related costs is the residential property tax which varies locally. Further in the paper the question will be discussed whether the housing decisions concerning the size of housing units made by the residents of voivodeship capitals are affected by the rate of the local residential property tax.

5. Identification of statistical relationship between residential property tax and housing decisions in terms of a property usable floor area

Taking into consideration local character of housing property markets and the structure of a residential property tax, i.e. its reliance on local council decisions and on the usable area of residential property or land, the authors of the present study focus on the identification of the effect of the annual residential property rates set by the city councils in the voivodeship capitals between 2009 and 2014 for residential buildings (X_{PB}), on the average usable floor area of housing units in the existing housing stock (X_{PMZ}) and the average usable floor area of newly built housing units (X_{PMB}).

The relationships between the variables (X_{PB}/X_{PG} and X_{PMB}/X_{PMZ}) are visualised by means of spread plots (Fig. 4). The weakness of the correlation between the analysed variables is indicated by the position of points corresponding to individual values of the two variables. The points form an irregular data cloud.

The analysis of the spread plots for X_{PB}/X_{PG} and X_{PMZ} reveals the outliers of Łódź and Wrocław. Between 2009 and 2013 the city council of Łódź set the local property tax on residential buildings and land at the ceiling values. Additionally, as it has been mentioned above, the local housing stock consisted of housing units with the lowest average usable floor area. The analysis results indicate that the decision to set annual property tax at the highest possible rate X_{PG} had no effect on the size of newly built housing units, as in 2009-2014 they were the largest in Poland. The
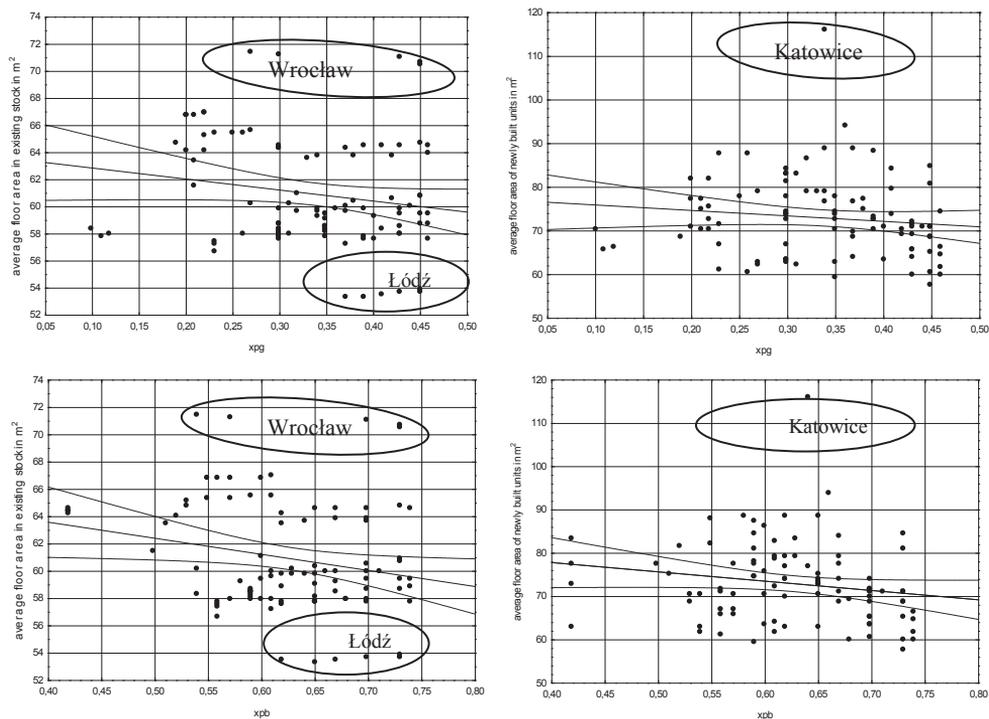
Figure 4. Spread of dependency between residential property tax rates for residential buildings (X_{PB}) and land (X_{PG}), and average usable floor area of housing units in existing housing stock (X_{PMZ}) or average usable floor area of newly built housing units (X_{PMB}) in voivodeship capitals in 2009-2014

Source: own study conducted by means of *Statistica 12 of StatSoft. Inc firm*.

second outlier was Wrocław where the local tax policy was based on gradual raising of the annual property tax rates until they reached the ceiling values in 2012 and 2013. This particular policy could have had an effect on the shrinking u.f.a of newly built housing units. That change seems to be of particular importance because the newly built and handed over housing units were smaller than the ones in the existing stock. On the other hand, the housing units in Wrocław were the largest in Poland.

Despite the fact that the study has revealed poor correlation between X_{PB} and X_{PMB}, this information is a signal for the actors on the residential property market. Rising costs of home maintenance related with the property tax (today this rise is directly proportional) have a limited impact on the buyers' decisions concerning the size of a property. Nevertheless, the implementation of the *ad valorem* tax will undoubtedly result in the increased role of tax regulations in the Poles' housing decisions.

The spread plots for the variables X_{PB}/X_{PG} and X_{PMB} show a significant increase in the average u.f.a. of housing property handed over in Katowice in 2012, but that seems to be an incidental case.

The computed Spearman correlation coefficient indicates a statistically significant correlation between the variables X_{PB} and X_{PMB}, but the power of this correlation is weak (–0.202). Yet, taking into consideration the number of cases introduced to the model, it can be regarded as satisfactory. The negative value of the coefficient shows that the increase in property taxes on residential buildings (X_{PB}) will induce shrinking in size of newly built housing units (X_{PMB}). This stands in contrast with the correlation between X_{PB} and X_{PMZ}. The value of the Spearman correlation coefficient for X_{PB} and X_{PMZ} reveals the lack of statistical correlation between the observed variables (–0.162). The obtained values of the Spearman correlation coefficients are shown in Table 2. The calculations are made for the materiality level at 0.05.

Table 2. Values of Spearman correlation coefficients for analysed variables

Variable	X_{PMZ} (average usable floor area of units in the housing stock)	X_{PMB} (average usable floor area of newly built housing units)
X_{PG} (annual property tax rate for residential buildings set by city councils)	–0.162	**–0.202**

Source: own study conducted by means of *Statistica 12 of StatSoft. Inc firm.*

In order to make full use of the information provided by the variables in this study as well as to perform a more complex analysis of the effect of residential property tax policies implemented by voivodeship capitals in 2009-2014 on the buyer's decisions in terms of the purchased residential property size, the authors of this paper apply a multidimensional statistical *k-means* analysis. This type of analysis belongs to a group of non-hierarchical methods and is the most common clustering method used in the taxonomic practice [Stanisz 2007]. It consists in partitioning the objects into *k-clusters* in order to minimise the variability among the clusters [Stanisz 2007], which allows for selecting a group of cities that are the most similar with regard to the variables adopted in the study, and the least similar to the objects (cities) classified to the other groups. The *k-means* clustering is performed by means of *Statistica 12*. The results of the clustering of voivodeship capitals in 2009-2014 are shown in Table 3. The clustering uses the sets of variables: 1) X_{PB} and X_{PMB} and 2) X_{PB} and X_{PMZ}. The analysis identifies three characteristic clusters. The variance analysis reveals that throughout all the analysed years the variables responsible for the membership in the cluster are X_{PMZ} or X_{PMB}.

The obtained results of clustering X_{PB} and X_{PMZ} allow for the conclusion that in the cities from Cluster I the average u.f.a. of units in the existing housing stock was the smallest (from 53.3 m² to 58.0 m²). Cluster III contains the cities with the largest average u.f.a. (from 63,4 m² to 71,4 m²). The results of clustering the objects for the variables X_{PB} and X_{PMB} are similar – the best variable of membership in a given cluster is the average usable floor area of newly built housing units (X_{PMB}). Three

Table 3. Elements of voivodeship capital clusters

Clusters	Objects in a given cluster	Cluster membership criteria
Clustering for variables X_{PB} and X_{PMZ}		
Cluster I	Łódź (2009-2014), Warszawa (2009), Kraków (2009-2014), Kielce (2010), Bydgoszcz (2009-2014), Olsztyn (2010-2014)	X_{PMZ}
Cluster II	Warszawa (2010-2014), Katowice (2009-2014), Lublin (2009-2014), Białystok (2009-2014), Kielce (2009, 2011--2014), Zielona Góra (2009), Szczecin (2009), Wrocław (2009), Gdańsk (2009-2014), Olsztyn (2009)	
Cluster III	Rzeszów (2009-2014), Zielona Góra (2010-2014), Poznań (2009-2014), Szczecin (2010-2014), Wrocław (2010-2014), Opole (2009-2014)	
Clustering for variables X_{PB} and X_{PMB}		
Cluster I	Katowice (2012)	X_{PMB}
Cluster II	Łódź (2012), Warszawa (2012-2014), Kraków (2009-2014), Katowice (2014), Lublin (2010, 2012-2014), Rzeszów (2009, 2011, 2012-2014), Białystok (2012- 2014), Kielce (2014), Zielona Góra (2013-2014), Poznań (2009, 2010, 2012-2014), Szczecin (2012), Wrocław (2009-2014), Opole (20100), Bydgoszcz (2009-2014), Gdańsk (2010-2014), Olsztyn (2009-2014)	
Cluster III	Łódź (2009-2011, 2013-2014), Warszawa (2009-2011), Katowice (2009-2011, 2013), Lublin (2009, 2011), Rzeszów (2010, 2013), Białystok (2009-2011), Kielce (2009-2013), Zielona Góra (2009-2012), Poznań (2011), Szczecin (2009--2011, 2013-2014), Opole (2009, 2011-2014), Gdańsk (2009)	

Source: own study conducted by means of *Statistica 12 of StatSoft. Inc firm.*

clusters of highly varying size are distinguished. Cluster I contains only one city, i.e. Katowice (2012) with the average u.f.a. of newly built units at 115.95 m². Cluster II contains the cities where the average u.f.a. of newly built units varied from 57 m² to 70.7 m², while Cluster III consists of the cities with the newly built unit size ranged from 73.75 m² to 93.9 m².

6. Conclusions

One of the principal tasks imposed by the Polish Constitution on public authorities is their responsibility to implement policies that address the citizens' housing needs. Special role in meeting these needs has been given to *gminas* whose task is not only to manage their local housing stock, but also to create favourable conditions for the development of different forms of housing. *Gminas* can influence local

property markets with their tax policies in way of setting annual residential property tax rates. Due to a particular role of housing in human lives, the local government tax policies should convey an incentive effect, thus supporting the growth of local housing markets and, consequently, the local socio-economic development. On the other hand, too strict tax policy can become a burden for and a brake on local property markets, the more so that the property tax is regarded as the factor that most effectively creates local development policies.

The analysis of the tax policies implemented by voivodeship capitals over the period of 2009-2014 reveals a clear upward trend in the annual residential property tax rates. The trend was the consequence of not only the ceiling rates set by the Ministry of Finance in that period, but also of the city councils' decisions to gradually bring those taxes nearer the maximum values. Stricter tax policies were announced by those cities where over the last 20 years the housing conditions, measured with the number of housing units per 1000 residents, had ameliorated the most. The positive aspect of the improved housing conditions in the surveyed cities was the decreased occupancy ratio.

The results of statistical analyses indicate the negative correlation between the local annual property tax rates on residential buildings (X_{PB}) implemented by local governments over the period of 2009-2014 and the average usable floor area of newly built housing units (X_{PMB}). However, such a correlation does not occur between the local annual property tax rates on residential buildings (X_{PB}) and the average usable floor area in the existing housing stock (X_{PMB}).

The study results allow for the conclusion that the tax policies implemented by city councils in 2009-2014 regarding annual rates of tax on residential property had an insignificant effect on the buyers' decisions concerning the size of the purchased property. The residential property tax burden must be implemented at the rate and up to the level that do not have a negative effect on the local residents' pursue to satisfy their housing needs. Also, the potential revenue from the property tax could be used for financing infrastructural investments, thus improving the living conditions in the cities.

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