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PROPERTY TAX AND THE FISCAL INDEPENDENCE OF POLISH LOCAL GOVERNMENT

In order to fulfill all the tasks in an efficient way, a gmina (as a basic unit of local government in Poland) must have an adequate level of regular revenues, and in the long run increase proportionally for the development of the region. The main purpose of this article is to describe a role of recurrent taxes on immovable property in local government revenues in Poland. We explore differences in property tax policy at a local level, and analyze similarities between Polish gminas with the use of cluster analysis.

Keywords: property tax; agricultural tax; forest tax; local government; cluster analysis; Poland; gmina.

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ПОДАТОК НА МАЙНО ТА ФІСКАЛЬНА НЕЗАЛЕЖНІСТЬ ПОЛЬСЬКОГО МІСЦЕВОГО САМОВРЯДУВАННЯ

У статті показано, яким чином польська гміна як базова одиниця місцевого самоврядування у Польщі має забезпечити собі регулярні надходження до бюджету задля довготривалого регіонального розвитку. Описано роль податків на нерухоме майно у Польщі. Показано різницю у місцевих податках, також проаналізовано спільні риси гмін у даній сфері оподаткування. Проведено кластерний аналіз, який дозволив поділити гміни на три групи за трендами оподаткування нерухомого майна.

Ключові слова: податок на майно; сільськогосподарський податок; лісний податок; місцеве самоврядування; кластерний аналіз; Польща; гміна.

Табл. 3. Форм. 3. Рис. 3. Літ. 14.

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НАЛОГ НА ИМУЩЕСТВО И ФИСКАЛЬНАЯ НЕЗАВИСИМОСТЬ ПОЛЬСКОГО МЕСТНОГО САМОУПРАВЛЕНИЯ

В статье показано, каким образом польская гмина как базовая единица местного самоуправления в Польше должна обеспечить себе регулярные поступления в бюджет для долгосрочного регионального развития. Описана роль налогов на недвижимое имущество в Польше. Показана разница в местных налоговых политиках, также проанализированы схожие черты гмин в данной области налогообложения. Проведённый кластерный анализ позволил разделить гмины на три группы по трендам налогообложения недвижимого имущества.

Ключевые слова: налог на имущество; сельскохозяйственный налог; лесной налог; местное самоуправление; кластерный анализ; Польша; гмина.

1. Introduction

In most developed countries recurrent tax on immovable property revenue is an important source of finance for local governments. The main purpose of this article is to assess the relative importance of property tax for local government revenues in Poland, and to explore differences at the local level.

In the study we used the data on revenues from recurrent taxes on immovable property at local level (NUTS-5) and explore the differences between gminas in Poland. We apply cluster analysis to find similarities in the fiscal role of property tax.

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2. Revenues from recurrent taxes on immovable property in the European Union

Taxes on land and property (or recurrent taxes on immovable property) exist all over the world (with rare exemptions) and in many developed countries they determine the local fiscal independence. Recurrent land and property tax regimes worldwide differ significantly in terms of: (1) tax base, (2) tax rates (progressive, regressive, linear), (3) algorithms of property taxation, (4) tax administration. Large comparative studies can be found in (Bird, Slack, 2004).

An effective fiscal decentralization requires meaningful revenue autonomy at regional and local levels of government. The question is which taxes should be allocated at these levels, the issue often referred to as "tax assignment problem" (Bahl, Martinez-Vazquez, 2006). Over the years the importance of the property tax has changed. According to the OECD statistics there is a long-term relative decline of property tax revenues in relation to total taxation revenues in the OECD countries, from average 7,8% in 1965, 6,3% in 1975, to about 5,4% in 2010 (Gluszak et al., 2013).

Table 1. Recurrent taxes on immovable property in the EU countries, % of the total taxation

Country	1995	2001	2003	2005	2007	2009	2011	Ranking in 2011
United Kingdom	8,5	8,8	9,4	9,1	8,8	10,1	9,4	1
Denmark	2,2	3,7	4	3,6	3,7	4,4	4,4	2
France	2,7	2,9	3,1	3,2	3,2	3,8	4,3	3
Poland	2,9	3,9	4,2	3,9	3,4	3,8	3,6	4
Greece	0,2	0,3	0,3	0,3	0,7	0,8	3,3	5
Ireland	2,4	1,9	2,1	2,1	2,1	3,2	3,3	6
Spain	2	2	2	2	2	2,9	3,2	7
Latvia	3	3,1	2,8	2,3	2,6	2,4	3,1	8
Belgium	2,7	2,6	3	2,8	2,8	3	3	9
Romania	0	2	2	1,8	2,3	2,3	2,4	10
Portugal	1,2	1,3	1,5	1,7	1,8	2	2	11
Sweden	1,8	1,8	2	1,9	1,8	1,7	1,8	12
Italy	2	1,9	2	2	1,9	1,4	1,5	13
Cyprus	1,2	1,3	1,7	1,8	3,6	1,6	1,5	14
Finland	1	1	1	1	1,1	1,3	1,5	15
Slovakia	1	1,3	1,2	1,5	1,4	1,5	1,4	16
Netherlands	1,5	1,6	1,8	1,9	1,2	1,3	1,4	17
Slovenia	0,9	1,2	1,1	1,1	1,1	1,3	1,3	18
Lithuania	1,2	1,7	1,5	1,2	1	1,2	1,2	19
Germany	1,5	1,1	1,2	1,2	1,1	1,2	1,2	20
Bulgaria	0,2	0,4	0,5	0,4	0,5	0,9	1,1	21
Estonia	1	1,2	1,1	0,9	0,7	1	1	22
Hungary	0,2	0,5	0,6	0,6	0,6	0,8	0,9	23
Czech Republic	0,7	0,5	0,5	0,4	0,4	0,5	0,6	24
Austria	0,6	0,5	0,5	0,5	0,5	0,5	0,5	25
Luxembourg	0,3	0,2	0,2	0,2	0,2	0,2	0,2	26
Malta	0	0	0	0	0	0	0	2

Source: Taxation trends in the European Union. Data for the EU member States, Iceland and Norway, Eurostat Statistical Books, 2013.

According to Table 1 the share of revenues from recurrent property taxes within total revenues is considerable. The largest share is visible in the UK, Denmark and

France. At the same time, other forms of property taxes³ – often in the form of transaction taxes when real estate is transferred in a sale are relatively high in Belgium, Italy, Luxemburg, Malta and France (Taxation..., 2013).

Poland ranked fourth in 2011 among the 27 EU member states, with the significant 3,6% share in total taxation. Nevertheless, an absence of multipurpose cadastre system (indispensable for gathering, updating and disseminating real estate data) obstruct property tax administration and collection in Poland. Also tax evasion is observed, and some tax bearers choose to pay farm tax (which is less expensive). In consequence, local government revenues from tax decrease (for discussion see Marona, 2006; Marona, Gluszak, 2005).

Due to the complexity of the tax system, some economist argue that in many cases official statistics cannot provide proper evidence for the exact importance of property tax for local government (Smith, Squire, 1987), thus more indepth research is needed. Moreover, since the recent financial crisis most municipalities have struggled to balance their expenditures, increasing the urgency for economic investigation of the changing impact of recurrent taxes on immovable property in local government revenues' structure in Poland.

3. The regulatory framework of recurrent taxes on immovable property in Poland

Presently local government entities have mixed sources of revenues. That means gminas possess their own revenues supported by transfers taking the form of grants for designated tasks and subsidies. According to the Law on revenues of local government entities (November, 13, 2003) gmina own sources of revenue include the following:

- the revenue from taxes (real property tax, forest tax, motor tax, tax from tax account, tax on succession and donations, tax on civil and legal procedures),
- the revenue from charges (among others, stamp duty, market-place fee, local tax and administration tax),
- a percentage of revenues from income tax paid by natural persons and income tax paid by legal persons,
- revenues from gmina property,
- succession, legacies, and donations to a gmina,
- the revenue from fines stipulated by other regulations,
- others.

Generally speaking, a subsidy consists of the so-called compensatory part and a balancing part. The so-called educational subsidy is also stipulated.

Another source of local government revenues may be grants for designated tasks allocated from the state budget. These are allocated to:

- tasks from the scope of state administration and other tasks stipulated by laws,
- tasks implemented by local governments, commissioned by state administration bodies,
- funding or financial support for local government tasks,
- implementation of tasks stipulated by international agreements,
- dealing with direct threats to law and order.

³ Eurostat classification of taxes on property include 6 categories of property taxes: 1) recurrent taxes on immovable property; 2) recurrent taxes on net wealth; 3) estate, inheritance and gift taxes; 4) taxes on financial and capital transactions; 5) other non-recurrent taxes on property and 6) other recurrent taxes on property.

The share of revenues from property within total gmina revenues is considerable. It is estimated that in the largest cities real property revenues may account for up to 50% of the total revenues, in smaller cities – approximately 20%, and in rural gminas – merely 5% (Cymerman et al., 2004). Nevertheless, financial reports submitted by all local government entities clearly indicate that recurrent property tax is the most important revenue for all gminas, and it may be compared only to the share in personal income tax (paid by natural and legal persons).

Currently enforced real property tax was modeled on the tax passed by the decree of May 20, 1955 on real estate taxes and charges (Etel, 2003). By that decree, for the first time in history the tax on land property was based on the area (expressed in square metres). Since then the structure of real property tax has been altered many times (Marona, 2006). At present, real property tax has been stipulated by the Law on Local Taxes and Charges (January, 12, 1991). The law was given a new wording, which covers all the issues pertaining to that tax by an ample amendment of 30 October 2002 (the law was enacted on 1 January 01, 2003). By amending the regulations, tax laws were adjusted to building law, civil code and premises ownership law.

In Poland real property tax is levied on land, buildings or parts thereof, as well as structures, or their parts, involved in conducting an economic activity. The legislator stipulated a number of exemptions, both objective and subjective. Land which has been classified in the land register as cultivable land, land grown with trees or shrubbery with farm land and forests, excluding those engaged in an economic activity, has been made tax exempt.

Real property tax is not applicable to:

- on reciprocal basis – real property owned or leased by foreign countries or international organizations, designated to accommodate the seats of diplomatic representatives, consular offices, or other missions enjoying privileges and immunities stipulated by laws, agreements, or international customs;
- land under flowing river beds and channels, excluding lakes and land taken up by water reservoirs or water power stations;
- real estate or parts thereof seized by local government entities, including gmina, powiat or marshal offices;
- public roads infrastructure jointly with the right of way strips and land underneath.

Real estate tax is paid by natural persons, legal persons, organization entities, including partnerships not endowed with the status of artificial person, which:

- own real estate or structures, with the provision that when an object liable to taxation is a freehold, then the obligation of paying property tax rests with the freehold owner;
- are freehold owners of real property or structures;
- are real property owners or parts thereof, structures or parts thereof, which are the property of the State Treasury or a territorial government entity, when the title to property of the former results from an agreement drawn with the owner, the Agency of Farm Property or other legal instrument, with the exception of dwellings which are not separate parts of real estate, or are occupied without a legal title.

Property tax is calculated on the basis of:

- in the case of land – its area;

- in the case of buildings or parts thereof – their useful floor area;
- in the case of structures or parts thereof used for economic activity – their value (the value being assessed pursuant to Article 4 of the above quoted law).

Basic formula in two former cases can be expressed by (1):

$$R = r * a, \quad (1)$$

where:

- R – property tax revenues
- r – rate of real property tax
- a – area / useful floor area (sqm)

According to (1) revenues from property tax depend on area and rates but since 2002 gminas may vary the amount for each type of objects of taxation, particularly taking into account: 1) location, 2) current land use, 3) type of business, 4) type of building. Therefore, in certain sense Polish property tax is connected with value. The rates of real property tax are set by gmina council. The maximum rates of real property taxes are listed in Table 2.

Table 2. Selected maximum rates of property tax within 2008–2013 (PLN/sqm)

Tax specification	2008	2009	2010	2011	2012	2013
Tax on land						
Used for conducting economic activity	0,71	0,74	0,77	0,80	0,84	0,88
Underneath lakes, water reservoirs or water power stations (on 1 ha of area)	3,74	3,90	4,04	4,15	4,33	4,51
Other	0,35	0,37	0,39	0,41	0,43	0,45
Tax on buildings or their parts						
Residential	0,59	0,62	0,65	0,67	0,70	0,73
Connected with conducting economic activity	19,01	19,81	20,51	21,05	21,94	22,82
Buildings connected with healthcare services	3,84	4,01	4,16	4,27	4,45	4,63
Tax on structures	2% of their value assessed pursuant to Article 4					

Source: Authors' work on the basis of Minister of Finance Ordinance on the enforcement of certain regulations on taxes and local charges.

Table 2 indicates that during 2008–2013 each year the maximum rates of property tax increased (the only exception was the tax on structures which held stable).

It should be added that Polish real property taxation system comprises agricultural tax and forest tax apart from real property tax proper. Agricultural tax is imposed on ownership, coownership, possession, copossession and perpetual usufruct of agricultural land, while forestry tax – forest land. Taxable base differs depending on whether land belongs to a farm (the number of accountable ha counts, set on the basis of factual area, potential productivity, quality and economic and climatic location of land) or not (area given in actual ha counts), therefore in certain sense this tax is also connected with value. Lower rates apply to farms and higher – to other lands. They are set as an equivalent of the value of a fixed amount of rye per one accountable ha or one ha (2).

$$Ra = p \times ha, \quad (2)$$

where:

- Ra – agricultural tax revenues
- p – fixed price of rye
- ha – accountable hectare / hectare of land.

Forest tax calculation method is similar. Basically, the rate is set as an equivalent of the value of a fixed amount of wood per 1 ha (3).

$$Rf = w * ha, \quad (3)$$

where:

Rf – forest tax revenues

w – fixed price of wood

ha – area of forests in hectares.

In real economy, situation is often more complex, and 3 major disturbances occur. Firstly, it can be easily demonstrated that current (mid 2013) regulatory framework of property tax in Poland can lead to a situation when tax payer is obliged to pay 3 different taxes connected with the real estate type. Secondly, in particular situations tax determination can be difficult, and disagreements are sometimes resolved in court. Lastly, due to complicated tax system in Poland, significant and unjustifiable differences in property tax rates can be observed (for discussion see Marona and Gluszak, 2005).

4. Revenues from recurrent taxes on immovable property in Poland

In general, property tax has been the most important source of revenues from all recurrent taxes on immovable property in Poland (91,6% of the revenues from 2008 to 2012). The revenues from property tax increased steadily in the period, which can be easily explained by a constant rise of maximum rates of property tax (Table 2). Its share has changed in the study period, it increased from 90,6% in 2008 to 92,9% in 2010 and 2011, just to experience a sudden drop to 90,9%, mainly due to substantial increase in revenues from agricultural tax in 2012.

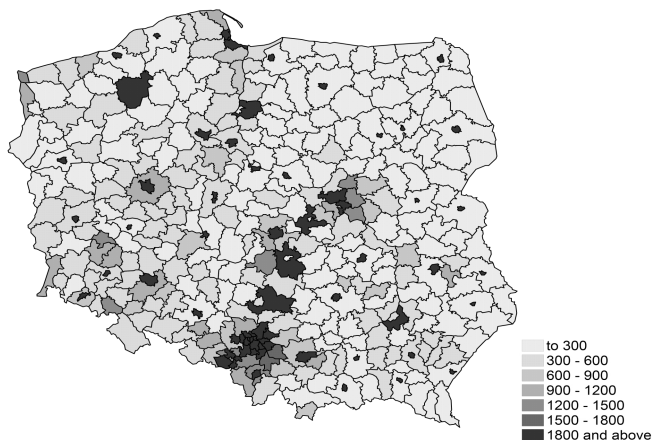
Agricultural tax has been the second source of revenues in the study period, but far less important on the country level. On average (weighted average) its share in local government revenues in 2008–2012 was 7,3%. Contrary to property tax, revenues from agricultural tax were comparable in 2008 and 2009, then we observed a sudden drop (more than 20%) in 2010, and then stabilization in 2011. The revenues from agricultural tax rose again significantly in 2012, by 45%. The share of agricultural tax in recurrent taxes on immovable property revenues decreased gradually from 8,3% in 2008 to 6,1% in 2011, just to increase to 8,0% in 2012%.

The forest tax has constant but modest share in revenues from immovable property taxation (on average 1,1%). With the exception to 2010 (sudden drop) the revenues from forest tax has been increasing in the study period, but the share remained at the same level.

Revenues from recurrent taxes on immovable property have spatial context. In Poland, as in most countries of the world, significant differences in economic development are observed on regional and local levels. Differences in economic development lead to different use of land, and there are several urbanized areas that provide potentially more taxable property for local government. We studied local differences on the local government level (NUTS-5), but for simplicity visualized them using a map at poviats level (NUTS-4), see Figure 1.

As it can be easily seen looking at the map (Figure 1) for majority of poviats in Poland annual revenues from all recurrent taxes on immovable property were less than 300 PLN per ha. Geographic differences are related to regional development:

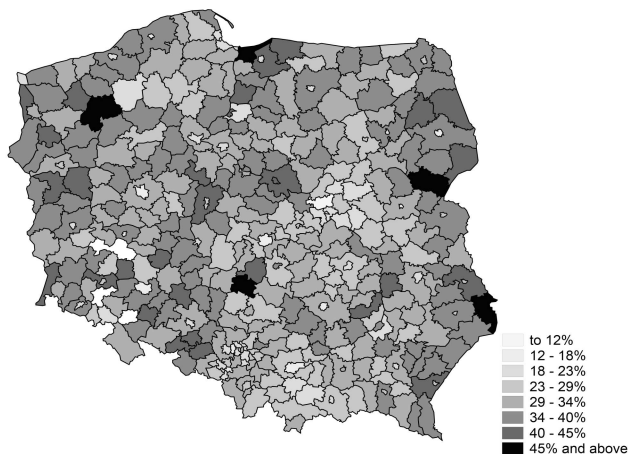
lower averages are observed in Eastern part of Poland, and in other rural areas. Higher averages are typical to urbanized areas – Silesia, metropolitan areas of Warsaw, Krakow, Lodz, TriCity, Wroclaw, Poznan, and other local second level urban centers.



Source: Developed by the author.

Figure 1. All recurrent taxes on immovable property in Poland from 2008 to 2012 (annual revenues in PLN per ha)

The analysis of recurrent taxes on immovable property share in local government revenues yield completely different results (Figure 2).



Source: Developed by the author.

Figure 2. All recurrent taxes on immovable property in Poland from 2008 to 2012 (% in gmina's own revenues)

The average share of recurrent taxes on immovable property share in gminas' revenues was 34% in 2008 to 2012. The geographic distribution in this case (Figure 2) was different than distribution of revenues per ha. When share in own revenues is concerned, in highly developed, urbanized areas recurrent taxes on immovable property have less important role for public finance than in rural areas (usually less than 20%), where their share in gmina's own revenue exceeds 40%. It can be explained by rela-

tive importance of other taxes. In municipal areas other taxes (local government share in personal and corporate taxes) contribute more significantly to gmina's revenue, due to number of economic entities and density of population. We study that phenomenon further in the next section, with the use of multivariate analysis.

5. Cluster analysis of local government revenues from recurrent taxes on immovable property

Currently (as the end of 2012) Poland is divided into 2479 gminas. Our dataset included information on revenues and tax policy from 2008 to 2012 collected at NUTS-5 level (gmina). We used information from 2478 gminas, dropping 1 observation (gmina Jaslice which separated from gmina Dukla in 2010) from our sample.

We explored 3 tax policy indicators, describing the role of property tax in local government revenues:

- (V1) Recurrent taxes on immovable property (annual revenues in PLN per ha)
- (V2) Recurrent taxes on immovable property share in gmina's own revenues (%)
- (V3) Property tax share in recurrent taxes on immovable property (%)

To explore revenues from recurrent taxes on immovable property we applied hierarchical cluster analysis. Cluster analysis is a range of statistical and mathematical methods and techniques used to find the groups in data (Kaufman, Rousseeuw, 1990). It is considered mainly an explorative technique and one of the most popular methods of multivariate statistical analysis.

The terms "cluster" and "group" that describe the outcome of cluster analysis are often used as synonyms (for example Everitt et al., 2011), and we would use them accordingly.

The ultimate goals of cluster analysis is to divide observations in a dataset to a finite number of groups (clusters) in order to satisfy two conditions (Timm, 2002):

- similarity of observations within a group,
- dissimilarity of observations between groups.

In order to categorize gminas with respect to the variables defining selected aspects of property tax relation to local government revenues, we applied hierarchical cluster analysis using the Ward's method (Ward, 1963), based on square Euclidean distance as a measure of gminas' dissimilarity. Variables (V1, V2, V3 above) were transformed (Z-standarized) to avoid potential bias connected with units of measurement.

We analyzed clustering procedure using dendrogram chart in order to assess the number of homogenous clusters that will reasonably describe the differences in local government property tax policies.

As a result of the cluster analysis of the 2478 gminas in Poland 3 different groups were revealed. These are:

- Group 1: Numerous cluster of both rural and urban – rural gminas. Typical representative of Group 1 was on the average development level.
- Group 2: The biggest group. Majority of its representatives were rural gminas. Usually gminas in Group 2 were significantly underdeveloped (in relation to the average development level for Poland). Most of them were low-income gminas, often in Eastern and South-Eastern parts of Poland.
- Group 3: Mostly well developed, highly industrialized and urbanized gminas. Often major urban areas in Poland, many of them being the biggest cities in Poland (notable representatives include Cracow, TriCity, Warsaw).

The selected descriptive statistics related to the system of recurrent taxes on immovable property are gathered in Table 3.

Table 3. Selected statistics on gminas clusters (2008 to 2012)

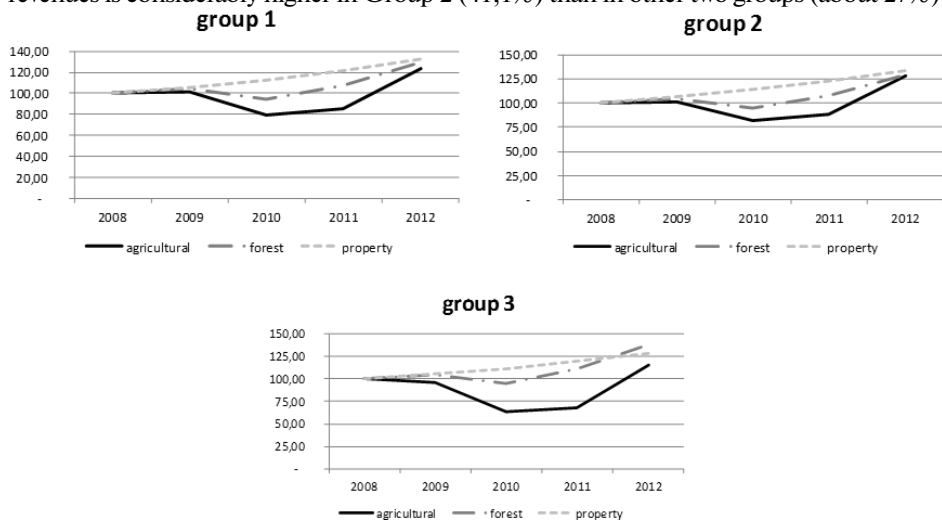
Indicator	Group 1, N = 1008	Group 2, N = 1264	Group 3, N = 206	Total, N = 2478
Property tax	82,6	65,8	99,3	75,4
(% in recurrent taxes on immovable property)	(11,3)	(19,8)	(0,7)	(19,2)
Forest tax	3,5	4,2	0,03	3,6
(% in recurrent taxes on immovable property)	(4,4)	(5,1)	(0,04)	(4,7)
Agricultural tax	13,9	30,1	0,7	21,0
(% in recurrent taxes on immovable property)	(10,3)	(19,4)	(0,7)	(18,2)
All recurrent taxes on immovable property	27,4	41,1	26,5	34,3
(% in gmina's own revenues)	(5,67)	(8,57)	(6,75)	(10,1)
All recurrent taxes on immovable property	504,2	272,4	6817,9	910,8
(annual revenues in PLN per ha)	(692,5)	(370,9)	(2746,5)	(2016,6)

Note: Standard deviation in parentheses.

Source: Authors.

Differences between groups are observed in the relative importance of property, agricultural and forest tax in revenues. While property tax plays the major role in all 3 groups, its share in Group 2 is only 65,8% (and 30,1% share of agricultural tax revenues) while 99,3% in Group 3. Revenues per ha were significantly higher in Group 3 (6818 PLN) compared to Group 2 (504 PLN) and Group 2 (272 PLN).

On the other hand, recurrent taxes from property relative importance for gminas' own revenues is considerably higher in Group 2 (41,1%) than in other two groups (about 27%).



Source: Developed by the author.

Figure 3. Dynamics of revenues from agricultural, forest and property taxes within the clusters of gminas, 2008–2012

The dynamics of local government revenues from recurrent taxation based on immovable property was quite similar in all 3 groups of gminas (Figure 3), and comparable to the results observed in the entire sample (discussed in previous section). In 2008–2012 we observed a constant increase in property tax revenues. In case of for-

est and even more evidently agricultural tax we observed a decrease in revenues from 2008 to 2010, stabilization and a sharp increase in 2012. The only worth noting difference between the groups is the relative volatility of agricultural tax revenues. The magnitude of changes in Group 3 (mostly urbanized areas) was significantly higher than in other two groups.

6. Conclusions

In the article, we addressed the problem of revenues from recurrent taxes on immovable property in Poland. Poland ranks fourth with respect to the share of recurrent property taxes in the total tax revenues. Statistical examination shows that they account for approximately 25% of own revenues of local government in Poland, but there are significant geographical differences.

The results from cluster analysis reveal 3 clusters of gminas with respect to composition of recurrent property taxation revenues and their fiscal role for local government. In general they play the key role in majority of gminas in Poland (Group 2, 51% of gminas), where they account for 41% of revenues (on average), and significant share comes from the agricultural tax. Recurrent tax from immovable property has been a relatively less important source of revenues for urbanized areas (mainly Group 3), but still significant in order to balance local finance.

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