REVENUE AUTONOMY AND ENTREPRENEURSHIP IN THE MUNICIPALITIES OF THE WARMIAN-MASURIAN VOIVODESHIP[1]

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A b s t r a c t

One of the most important problems in the proper functioning and fulfillment of entrusted tasks by municipalities in Poland is their high income independence. It depends, inter alia, on the broadly understood entrepreneurship undertaken in their area. Therefore the aim of this study was to identify the factors affecting entrepreneurship in the Warmian-Masurian Voivodeship in 2014–2016, which determined the revenue autonomy of municipalities in the region. The analysis was conducted with the use of a multiple linear regression model. Revenue autonomy, which is measured by the proportion of a municipality's own-source revenues in total revenues, was the explained (dependent) variable. The initial group of explanatory (independent) variables consisted of 22 indicators linked with the operations of local businesses in the evaluated region.

The key determinants of the revenue autonomy of municipalities were: the percentage of commercial partnerships in the total number of companies in the private sector, the percentage of private-sector companies in the total number of companies, the percentage of industrial and construction companies in the total number of companies, the percentage of self-employed in the total number of companies in the private sector, the number of agricultural producers, livestock breeders and hunting companies per 1,000 residents, and the number of companies employing up to 9 people per 10,000 working-age residents.

[1] "Voivodeship" (Polish *województwo*) is the highest-level administrative subdivision of Poland.

SAMODZIELNOŚĆ DOCHODOWA A PRZEDSIĘBIORCZOŚĆ W GMINACH WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

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S t r e s z c z e n i e

Jednym z ważniejszych problemów prawidłowego funkcjonowania i wypełniania powierzonych zadań przez gminy w Polsce jest ich duża samodzielność dochodowa, która zależy m.in. od szeroko rozumianej przedsiębiorczości podejmowanej na ich terenie. W związku z tym celem artykułu była identyfikacja czynników związanych z przedsiębiorczością podejmowaną na terenie województwa warmińsko-mazurskiego w latach 2014–2016, determinujących samodzielność dochodową gmin tego województwa. Metodą badawczą była analiza regresji liniowej wielorakiej. Za zmienną objaśnianą przyjęto podstawowy miernik samodzielności dochodowej, jakim jest udział dochodów własnych gminy w dochodach ogółem, natomiast wstępną listę zmiennych objaśniających utworzyły 22 wskaźniki dotyczące różnych aspektów funkcjonowania podmiotów gospodarczych zlokalizowanych na terenie gmin badanego województwa.

Najważniejszymi determinantami kształtującymi samodzielność dochodową gmin okazały się: udział spółek handlowych w podmiotach prywatnych ogółem, udział podmiotów gospodarczych działających w sektorze prywatnym w podmiotach ogółem, udział podmiotów gospodarczych w grupie przemysł i budownictwo w podmiotach ogółem, udział osób fizycznych prowadzących działalność gospodarczą w podmiotach prywatnych ogółem, liczba podmiotów gospodarczych prowadzących działalność w dziale rolnictwo i zajmujących się uprawą rolną, chowem i hodowlą zwierząt oraz łowiectwem na 1000 mieszkańców gminy, liczba podmiotów gospodarczych zatrudniających od 0 do 9 osób na 10 tys. mieszkańców w wieku produkcyjnym.

Intruduction

Revenue autonomy is the ability of local government entities to generate budget revenues and implement autonomous tax policies (Kosek-Wojnar & Surówka, 2007, p. 78). Revenue autonomy is the key economic aspect of a local government's operations. Local governments with a limited ability to finance operations from independent sources of income are merely providers of administrative functions (Poniatowicz, 2014, p. 33, 34).

In periods of stagnant economic growth, the revenue autonomy of local governments decreases because the share of own revenues in total revenues declines whereas an increasingly important role is played by external transfers. This scenario was observed in local governments throughout Poland, in particular in large urban areas, in the first years after the global economic crisis

of 2008–2009 (Poniatowicz, 2014, p. 33). This study was conducted in the Warmian--Masurian Voivodeship which is one of the least economically developed Polish regions plagued by macroeconomic problems. The Warmian-Masurian Voivodeship is characterized by the lowest GDP per capita, the highest unemployment in the country, low levels of urbanization, low levels of revenue autonomy and an unfavorable structure of municipal budgets. According to the latest report of the Polish Agency for Enterprise Development, the Warmian-Masurian Voivodeship ranks last in Poland with regard to entrepreneurship (*Raport...*, 2017, p. 43).

Any attempts at improving a municipality's revenue autonomy should begin with an analysis of the measures that could be undertaken to stimulate local entrepreneurship in the Warmian-Masurian Voivodeship and enable municipal governments to better perform their responsibilities in the public sector. The first stage of the presented problem seems to be identification of these aspects of entrepreneurship undertaken in the area of a selected voivodeship, whose conscious stimulation may contribute to improving the economic situation of the entire region.

The aim of this study was to identify the factors affecting the revenue autonomy of municipalities in the Warmian-Masurian Voivodeship, which are linked with the operations and the structure of local businesses. The study was conducted based on the resources of the Local Data Bank of the Central Statistical Office (BDL GUS) for 2014–2016. The main limitation of the study was the scarcity of statistical data at the municipal level. The determinants of revenue autonomy in the analyzed municipalities and the strength of their relationships with the explained (dependent) variable were identified by multiple linear regression analysis based on the least squares method[2]. The results were verified statistically (Kufel, 2011) to guarantee that they meet the following assumptions (Welfe, 2014, p. 60-62; Stanisz, 2007, p. 33-35, 61-63; *Analiza regresji...*, 2009, p. 129, 130; Bhattarai, 2015, p. 12-14):

– the tested model is linear in its parameters (Ramsey RESET test);

– the number of observations n is greater than or equal to the number of estimated parameters;

– the parameters are not co-linear: none of the variables supplies the model with information that is provided by other variables (VIF is less than 10);

– the expected value of the random component is zero. Variables that were not included in the model do not significantly influence the mean value of Y;

– the random component is homoscedastic – all variables in the model have the same variance (White test);

– there is no autocorrelation in the random component (LM test);

– the random component has normal distribution (Doornik-Hansen test).

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[2] This method and its modifications in the subject literature were commonly used in searching for determinants of various budgetary aspects of communes in Poland (eg. Smutek, 2012; Sekuła & Basińska, 2014; Poniatowicz, 2015) or equivalents of Polish municipalities in other countries (eg. Benito & Bastida, 2004, 2008; Delgado *et al.*, 2015; Smith & Benpah, 2017).

The above assumptions were tested at a significance level of p=0.05. Econo-metric calculations were performed in the GRETL v. 2017d-git program, and data were processed in Statistica v. 13 and Excel.

Revenue autonomy of the municipalities in the Warmian-Masurian Voivodeship

Local government entities, including municipal authorities, have the right to self-governance in various areas of activity. The Polish law, in particular Articles 163–169 of the Constitution of the Republic of Poland (Konstytucja Rzeczypospolitej Polskiej z 2 kwietnia 1997 r., DzU z 1997 r., nr 78, poz. 483), defines the extent to which public tasks can be performed independently by local governments. Local governments have the right to appoint constitutive organs and define their organizational structure. They have the right to perform public duties as their direct responsibility, levy and collect local taxes and charges, exercise rights of ownership and other property rights (Jagoda, 2014, p. 15).

The financial autonomy of local government entities is a particularly important consideration for the inhabitants of territorial units. It enables local governments to perform public tasks by making independent decisions regarding public expenses (Jagoda, 2014, p. 15, 16; Patrzałek, 2010, p. 68) and by planning and implementing their budgets. The aim of financial autonomy is to guarantee that local government entities generate the highest possible proportion of their revenues from local sources by stimulating local economic growth rather than from transfers of public funds from the central government (Heller & Farelnik, 2013, p. 84).

Revenue autonomy plays a particularly important role in the financial autonomy of municipalities. Self-reliant local governments have steady and reliable sources of income. Due to their revenue autonomy, municipalities can influence the structure and efficiency of income sources (Miemiec *et al.*, 2013, p. 55). Revenue autonomy applies particularly to own-source revenues generated in a municipality. Local sources of income provide local authorities with independence in decision making, they enable them to better meet the local community's needs and improve the quality of public services (Ślebodzka, 2013, p. 292). The proportion of own-source revenues in total revenues is the key indicator of a municipality's revenue autonomy (Głowicka-Wołoszyn & Wysocki, 2014, p. 35). This indicator is used to evaluate a municipality's financial performance because own-source revenues are the most stable item of the budget, which is controlled by the municipal government. According to the act on the revenues of local government entities (Ustawa z 13 listopada 2003 r. o dochodach jednostek samorządu terytorialnego, DzU z 2008 r., nr 157, poz. 1240), municipalities can generate the following types of own revenues: local taxes (property taxes,

agricultural taxes, vehicle taxes), local charges (stamp duty, local market charges, operating fees) and other proceeds (inheritance, donations, sale of municipal property).

The Warmian-Masurian Voivodeship has 116 municipalities which were characterized by relatively low levels of revenue autonomy in 2014–2016. The proportion of own-source revenues in total revenues was low at 40% on average in 2014 and 2015, and a further drop to 36.17% was reported in 2016. In the analyzed period, the results noted in individual municipalities deviated from the regional average by 10 to 11 percentage points. The highest levels of revenue autonomy in the studied region were observed in the municipality of Stawiguda, where the evaluated parameter reached 71.07% in 2014, 76.26% in 2015, and 64.89% in 2016. The lowest values of the analyzed indicator were determined in the municipality of Janowiec Kościelny at 15.93%, 14.87% and 15.15%, respectively. The municipalities in the discussed region were characterized by significant variations between the minimum and maximum values of the studied indicator. The highest difference was noted in 2015 at 61.39%, followed by 55.68% in 2014 and 49.74% in 2016. The basic statistical parameters describing the revenue autonomy of the evaluated municipalities are presented in Table 1. Only collective data were presented due to space constraints.

Table 1

Basic statistical measures describing the proportion of own-source revenues in total revenues in the municipalities of the Warmian-Masurian Voivodeship in 2014–2016

Parameter	2014	2015	2016
Arithmetic mean [%]	40.08	40.84	36.17
Standard deviation [% points]	10.93	10.94	9.56
Minimum value [%]	15.39	14.87	15.15
Maximum value [%]	71.07	76.26	64.89
Range [%]	55.68	61.39	49.74

Source: own elaboration based on *Wskaźniki do oceny…* (2017).

In the analyzed period, the average revenue autonomy of Polish municipalities was estimated at 52% (*Gospodarny samorząd 2017*, online), which indicates that the studied indicator was relatively low in the municipalities of the Warmian--Masurian Voivodeship. Transfers from the central government to municipalities cannot be completely eliminated; however, these funds should merely supplement local revenue sources, and not replace them (Poniatowicz, 2015, p. 258). Local governments should derive a minimum 70% of total revenues from own sources of income to maintain financial autonomy (Kalisiak-Mędelska, 2013, p. 118). The figures above suggest that the municipalities in the analyzed region were largely dependent on state transfers, which poses the greatest threat to their

revenue autonomy. According to the literature, the structure of transfers from the central government constitutes a specific and indirect impediment to revenue autonomy. Targeted subsidies from the state play a special role because they deprive local governments of autonomy in the process of allocating these funds. Targeted payments are made to attain strictly defined objectives, and they are distributed and accounted for based on a rigorous set of rules. In the Warmian-Masurian Voivodeship, targeted subsidies accounted for nearly 31% of total municipal revenues on average in the analyzed period (*Wskaźniki…*, 2017), which testifies to low levels of autonomous decision-making in local budgeting.

Determinants of revenue autonomy in the municipalities of the Warmian-Masurian Voivodeship in 2014–2016

Territorial units are characterized by differences in local conditions, including population (demographic data), economic growth, employment, political factors, environmental conditions, natural resources, the size and the location of local government entities. All of the above elements influence a municipality's financial status (Baptista *et al.*, 2008, p. 58; Filipiak, 2009, p. 19-28; Jastrzębska, 2009, p. 95-119; Wójtowicz, 2014, p. 104; Skowron, 2012, p. 81-84). Entrepreneurship, namely the economic activities conducted by businesses registered in a municipality, is one of the most important determinants of a local government's revenue autonomy. In addition to social factors, the number and structure of local businesses exert the greatest effect on the tax base, namely a municipality's revenue structure and, consequently, its revenue autonomy (cf. Brzozowska *et al.*, 2014, p. 46, 47; Żyżyński, 2009, p. 70; Gwodzicka-Piotrowska, 2012; Wołowiec & Reśko, 2009; Głowicka-Wołoszyn *et al.*, 2017, p. 76). Local entrepreneurs generate a substantial portion of a municipality's own-source revenues, and they are responsible for the part of income generated by virtue of the corporate income tax (CIT). By creating jobs and improving the situation in the local labor market, entrepreneurs also contribute to an increase in municipal revenues by virtue of the personal income tax (PIT). The capital invested by entrepreneurs in the local market also caters to the needs of the local community (Bończak--Kucharczyk *et al.*, 1998, p. 6).

In view of the above, attempts have been made to identify the determinants and trends relating to the revenue autonomy of municipalities in the the Warmian-Masurian Voivodeship. The analysis was conducted with the use of a multiple linear regression model. The explained (dependent) variable (*Y*) was the proportion of own-source revenues in the total revenues of municipalities in the Warmian-Masurian Voivodeship in 2014-2016. The initial group of explanatory (independent) variables was composed of the following indicators which were calculated based on the resources of BDL GUS for the analyzed period:

X_1 – number of new companies registered in the REGON database in a given year per 10,000 residents;

X_2 – number of companies registered in the REGON database per 10,000 residents;

X_3 – number of companies removed from the REGON database per 10,000 residents;

X_4 – percentage of deregistered companies in the total number of companies registered in the REGON database [%];

X_5 – percentage of newly registered companies in the creative industries in the total number of newly registered companies [%];

X_6 – number of companies per 10,000 working-age residents;

X_7 – percentage of agricultural producers, forestry, hunting and fisheries companies in the total number of companies [%];

X_8 – percentage of industrial and construction companies in the total number of companies [%];

X_9 – percentage of companies outside agriculture, forestry, hunting, fisheries, industry and construction in the total number of companies [%];

X_{10} – number of agricultural producers, animal breeders and hunting companies per 1,000 residents;

X_{11} – number of companies employing up to 9 people per 10,000 working-age residents;

X_{12} – number of companies employing 10 to 49 people per 10,000 working-age residents;

X_{13} – number of companies employing 50 to 249 people per 10,000 working-age residents;

X_{14} – number of companies employing more than 250 people per 10,000 working-age residents;

X_{15} – percentage of private-sector companies in the total number of companies [%];

X_{16} – percentage of self-employed in the total number of companies in the private sector [%];

X_{17} – percentage of commercial partnerships in the total number of companies in the private sector [%];

X_{18} – percentage of commercial partnerships with foreign capital involvement in the total number of companies in the private sector [%];

X_{19} – percentage of cooperatives in the total number of companies in the private sector [%];

X_{20} – percentage of foundations in the total number of companies in the private sector [%];

X_{21} – percentage of associations and social organizations in the total number of companies in the private sector [%];

X_{22} – percentage of public sector companies in the total number of companies [%].

The results of the analysis indicate that 64% of the variation in the revenue autonomy of the municipalities in the Warmian-Masurian Voivodeship was explained by the indicators relating to the level and structure of local entrepreneurship. Revenue autonomy was affected at 36% by other factors that were not included in this study. In the group of potential factors whose combined and individual effects significantly influenced the explained (dependent) variable, six factors were found to play the most important role (based on the results of Student's t-test analyzing the significance of the parameters and the F-test analyzing the combined significance of the parameters). Based on the coefficients of regression, the first factor was the percentage of commercial partnerships in the total number of companies in the private sector [%], X_{17}. The higher the number of commercial partnerships, the greater was the revenue autonomy of the investigated municipalities. The next factor was the percentage of private-sector companies in the total number of companies [%], X_{15}, and it was also positively correlated with revenue autonomy. The revenue autonomy of the investigated municipalities was negatively affected by the percentage of industrial and construction companies in the total number of companies [%], X_8. The municipalities with a higher proportion of businesses from the above sectors were characterized by lower levels of revenue autonomy. The percentage of self-employed in the total number of companies in the private sector [%], X_{16}, was positively correlated with a municipality's revenue autonomy. The number

Table 2

The results of multiple linear regression analysis of the proportions of own-source revenues in the total revenues of municipalities in the Warmian-Masurian Voivodeship in 2014-2016, and indicators of local entrepreneurship

Explanatory variables/ evaluation criteria	X_8	X_{10}	X_{11}	X_{15}	X_{16}	X_{17}
Coefficient of regression	−0.50	−0.09	0.01	0.65	0.34	1.07
P-value in Student's t-test	0.00	0.00	0.00	0.00	0.00	0.00
Indicator of collinearity – VIF	1.79	1.49	1.99	1.35	1.71	1.23
Combined significance of parameters	$F(6.341) = 101.22$ with p-value $= P(F(2.339) > 101.22) = 1.12e\text{-}72$					
Linearity test – Ramsey RESET test	$F(2.339) = 1.48$ with p-value $= P(F(2.339) > 1.48) = 0.23$					
Normal distribution of the random component – Doornik-Hansen test	Chi-squared(2) = 2.79 with p-value = 0.25					
Homogeneity of residual variance – White's test	LM = 32.08 with p-value $= P($chi-squared (27)>32.08$) = 0.23$					
Autocorrelation – LM tests	LMF = 3.55 with p-value $= P(F(1.340) > 3.55) = 0.06$					
Coefficient of determination R^2	64.04%					

Source: own elaboration based on the results of the study.

of agricultural producers, animal breeders and hunting companies per 1,000 inhabitants, X_{10}, adversely impacted a municipality's revenue autonomy, but to a lesser extent than the previous factors. Revenue autonomy was least influenced by the number of companies employing up to 9 people per 10,000 working-age residents, X_{11}. This factor was positively correlated with revenue autonomy. The results of the analysis are presented in detail in Table 2.

Potential explanatory (independent) variables X_i, not listed in Table 2, were eliminated because they did not exert a significant effect on variable Y (X_1, X_3, X_4, X_5, X_{12}, X_{13}, X_{14}, X_{18}, X_{19}, X_{20}, X_{21}) or were removed from the set of explanatory variables due to collinearity problems (X_2, X_6, X_7, X_{11}, X_{22}) where VIF was higher than 10. The general multiple linear regression equation was written in the following form:

$$Y = -50.72 + 1.07X_{17} + 0.65X_{15} - 0.5X_8 + 0.34X_{16} - 0.09X_{10} + 0.01X_{11}.$$

The practical application of the above model may be its further application in economic forecasting or simulations of the explained variable. Thanks to this, the municipalities could properly and effectively modify their policy of development and promotion of entrepreneurship in order to improve income independence.

Conclusions

The results of this study point to low levels of revenue autonomy in the municipalities of the Warmian-Masurian Voivodeship. The level and structure of local entrepreneurship were the key internal factors that exerted the greatest effect on the revenue autonomy of the analyzed municipalities. Local businesses generate a very important category of budgetary revenues, namely local taxes and charges which are largely responsible for the municipalities' revenue autonomy and financial decision-making capacity. Regardless of external factors (such as macroeconomic factors), local taxes and charges can be stimulated and influenced by municipal governments. This group of income particularly includes those that generate economic entities located in the municipalities.

The identified determinants of municipal revenue autonomy in the Warmian--Masurian Voivodeship, associated with entrepreneurship, can be used to formulate several conclusions and recommendations relating to the local authorities' role in fostering a supportive environment for local business growth and, consequently, improving their financial decision-making capacity.

Stimulation of entrepreneurship should be the main goal of municipalities in the Warmian-Masurian Voivodeship on the road to achieving revenue autonomy. The proportion of commercial partnerships and sole proprietors in the local market should be increased. Microenterprises employing up to 9 people

should play an increasingly important role in the analyzed region. Agriculture is the predominant income-generating activity in the evaluated municipalities, and active measures are needed to stimulate the growth of entrepreneurship outside the farming sector. These goals are not easy to achieve, and they require a sufficiently long time-frame as well as dedicated tools. Municipal authorities can set new priorities in their economic policy and implement economic programs addressing those objectives. The tasks and competencies of local governments should be clearly defined to increase their operational transparency. Transparent decision-making is also required in the process of granting tax deductions and exemptions to guarantee that local businesses have equal access to fiscal privileges. The value of local investments and the sequence of investment projects should be governed by a set of transparent and fair criteria. Municipal authorities should also prudently choose debt instruments such as credits, loans and bond issues. Similar criteria should apply to municipal programs that co-finance local investments and provide support for local entrepreneurs.

The implementation of the above measures could contribute to an improvement in the municipalities' revenue autonomy. Financially independent municipalities are more effective in catering to the needs of local communities, which stimulates entrepreneurship. The above goals can be achieved in the long term provided that the relevant measures are implemented conscientiously, and that local authorities are not exposed to political or lobbying pressure.

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