

# Equilibrium. Quarterly Journal of Economics and Economic Policy

Volume 15 Issue 3 September 2020

p-ISSN 1689-765X, e-ISSN 2353-3293

www.economic-policy.pl



## ORIGINAL ARTICLE


**Citation:** Marks-Bielska, R., Lizińska, W., Wojarska, M., & Babuchowska, K. (2020). Institutional efficiency versus stability of local governments in basic areas of activity: the case of Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 15(3), 463–487. doi: 10.24136/eq.2020.021

Contact to corresponding author: wieslawa.lizinska@uwm.edu.pl; University of Warmia and Mazury in Olsztyn, Faculty of Economic Sciences, Institute of Economics and Finance, Department of Economic Policy, Oczapowskiego Str. 4, 10-718 Olsztyn, Poland

Received: 19.03.2020; Revised: 12.07.2020; Accepted: 7.08.2020; Published online: 15.09.2020

### Renata Marks-Bielska

*University of Warmia and Mazury in Olsztyn, Poland*

 [orcid.org/0000-0001-7319-1918](https://orcid.org/0000-0001-7319-1918)

### Wiesława Lizińska

*University of Warmia and Mazury in Olsztyn, Poland*

 [orcid.org/0000-0002-6957-2846](https://orcid.org/0000-0002-6957-2846)

### Magdalena Wojarska

*University of Warmia and Mazury in Olsztyn, Poland*

 [orcid.org/0000-0002-4594-5863](https://orcid.org/0000-0002-4594-5863)

### Karolina Babuchowska

*University of Warmia and Mazury in Olsztyn, Poland*

 [orcid.org/0000-0002-9053-7842](https://orcid.org/0000-0002-9053-7842)

## Institutional efficiency versus stability of local governments in basic areas of activity: the case of Poland

**JEL Classification:** H70; O10; O13; O20

**Keywords:** *institutional efficiency of local governments; stability of tasks; activity of local government; synthetic measure*

### Abstract

**Research background:** In the last decade, the importance of institutions in determining economic processes and the economic growth is increasingly emphasized. Only a few papers deal with the efficiency of institutions, especially at a local level. Thus, a question arises whether the local authorities, in their pursuit of performing the assigned tasks, make every effort to attain a high level of efficiency?

**Purpose of the article:** The aim of the paper was to determine the relationships between institutional efficiency and identified areas of stability achieved by local governments in their basic roles. Supplementary aim of this study was to analyze the relationship between the type of

a municipality (urban, rural or mixed urban-rural) and the efficiency and stability of undertaken tasks. A research hypothesis was put forth, assuming that the institutional efficiency of municipal governments depends on the level of stability in basic areas of activity pursued by a given municipality. Supplementary aim of this study was to analyze and assess the relationship between the type of a municipality (urban, rural or mixed urban-rural) and the efficiency and stability of undertaken tasks.

**Methods:** An accumulated synthetic index of institutional efficiency and partial indices of efficiency in five areas: economic and spatial, financial, administrative, human resources management in municipal offices, provision of social, cultural and educational services, were derived from data acquired from public statistics (Local Data Bank) and from direct investigations conducted in 2015/2016 in 1220 municipalities out of 2479 ones present in Poland. The method for obtaining the index was linear ordering of multi-feature objects.

**Findings & Value added:** The analyses have confirmed the hypothesis assuming that there is a relationship between the institutional efficiency of local governments and stability of the tasks they performed. These dependences varied in individual provinces of Poland. It is more beneficial for local governments to raise stability by attaining some improvement in these areas where it is low, but not at the expense of those areas where it is high. A specific group of municipalities consisted of urban-rural communities. Their complex and diverse structure must meet the challenge of performing their tasks in specific conditions (urban and rural areas).

## Introduction

Local socio-economic development depends not only on the economic foundation and potential financial support, but also, and increasingly more often, on conditionalities arising from institutional factors (MacLeod & Goodwin, 1999; Gibbs *et al.*, 2001; Gómes *et al.*, 2016). Nowadays, in both theory and empirical research, the importance of institutions (formal and informal) in determining economic processes is increasingly emphasized. One of the reasons for directing attention to the role of institutions in the economy is the increased interest in developing institutionalism and mainstream economics of the claims of the new institutional economy (NIE), and what is associated with it — the use of an interdisciplinary approach in contemporary economic research (Chong & Calderón, 2000; Law & Azman-Saini, 2012; Breen & Gillanders, 2012; Grigoli & Mills 2014; Andreu-la & Chong 2016).

Over the recent years, there has been a meaningful change in the research perspective of institutions. Whereas in the last decade of the 20th century such investigations were concentrated around efforts to determine the contribution of institutions to income levels across the world, and the impact of institutions on the economic growth (Knack & Keefer, 1995, 1997; Mauro, 1995; Hall & Jones, 1999; Kaufmann *et al.*, 1999, 2003; Rodrik, 1999, 2003; Rodric *et al.*, 2004; Woolcock & Narayan, 2000; Acemoglu *et al.*, 2001; Acemoglu, 2008; Kaufmann & Kraay, 2002), more recently attention has been paid to the quality of institutions, mostly in

terms of macroeconomics (Álvarez-Díaz & Miguez, 2008; Balcerzak, 2020; Balcerzak & Pietrzak, 2016; 2017). However, few papers deal with the efficiency of institutions (Putnam, 1995; Chousa *et al.*, 2005), especially on a local level. Despite this scarcity, Vincent and Stephen (2015) emphasise the need to evaluate the capacity of institutions (including local authorities) in executing tasks they are responsible for, mainly because of importance for socio-economic development (Acemoglu *et al.*, 2005; Evans & Harding, 1997; Williams, 1997).

Thus, a question arises whether the local authorities, in their pursuit of performing the assigned tasks, make every effort to attain a high level of efficiency? Is the achieved institutional efficiency dependent on the specific character of a local government, i.e. the type of a municipality? Considering the role played by a local government in satisfying the local community's expectations, another essential problem is whether or not the identified level of institutional efficiency results from performing tasks in a sustainable manner in all domains. Local authorities can do their tasks selectively, which does not help to sustain stability. It is, therefore, important to ask where there are stronger correlations in the local authorities' efforts to stabilise the performance of tasks in particular domains of activity, or to raise the efficiency thereof.

One of the aims of this research, conducted as part of a larger, ongoing project (grant titled: Institutional efficiency versus local economic development — determinants and interactions), was to determine the relationships between institutional efficiency and identified areas of stability achieved by local governments in their basic roles. To this aim, a research hypothesis was put forth, assuming that the institutional efficiency of municipal governments depends on the level of stability in basic areas of activity pursued by a given municipality. A supplementary aim of this study was to analyse the relationship between the type of a municipality (urban, rural or mixed urban-rural) and the efficiency and stability of undertaken tasks.

Regarding an evaluation of a local government's work, for the purpose of this study, institutional efficiency was defined as permanent readiness to build a social and economic partnership with both entrepreneurs and a local community, as well as an ability to provide a quick and competent response to entrepreneurs willing to set up or already conducting business enterprises in a given municipality.

The stability of a municipality in the basic areas of its activity (economic and spatial, financial, administrative, human resources management in the municipal office, provision of social, cultural and educational services) is understood as the ability to achieve institutional efficiency on a sustainable level between the above areas.

Values of the stability index and correlation between the stability and institutional efficiency indices (calculated at an earlier stage of the study) were computed for the analysed municipalities. An accumulated synthetic index of institutional efficiency and partial indices of efficiency was calculated in five areas: economic and spatial, financial, administrative, human resources management in municipal offices, provision of social, cultural and educational services.

To achieve the research aim, several methods were used, including linear ordering of multi-feature objects (using a synthetic measure calculated as a mean value of normalised values of partial indices) as well as the estimation of the model for the efficiency index including the impact of the type of municipalities and the estimation of the model for the stability index including the effect of the type of municipality.

The next section presents a brief review of the literature illustrating the challenges that local authorities must meet, factors determining institutional efficiency, and the tasks they complete. The third part presents the data and methods used to calculate the efficiency and stability index, as well as the relationships between them in the types of a municipalities. The fourth section presents the results of the analysis along with a brief overview of key findings. Finally, the last section summarizes the main findings of the study and provides suggestions for further searches.

## **Literature review**

Local governments all over the world function under different constitutional and institutional frameworks, but in the 21st century they all perform tasks within four basic areas: identity, economic development, social welfare and community governance. Each of these societal roles deserves to be analyzed in a very broad context, they may have different importance and can be performed through different types of practice in particular countries. Moreover, each of these functions can be exposed to threats created by social and economic changes (Stoker, 2011).

Among some significant socio-economic changes, particularly worthy of attention are transformation processes, including the widespread phenomenon of decentralization of governing bodies, when a more rapid response of authorities to needs of a local community is possible as the preferences are adjusted to smaller, more homogeneous groups. However, opponents of decentralization counter that local government's shortage of human, financial and technical resources prevents it from providing appropriate public services in a decentralized environment (Faguet, 2004).

It is also worth mentioning that the efficiency of a local governing body can depend on the activity of governments in neighboring municipalities (Geys, 2006). But Ter Bogt (2008) noticed that organizations often mimic changes in organizations around them — creating isomorphic organizations.

According to Afonso and Fernandes (2008), it is possible to improve institutional efficiency without additional costs allocated to this purpose. Among the factors which shape the efficiency of institutions, some are classified as internal conditions of a local government, perceived as an organization in which the development of the administrative sphere plays an important role.

Over the recent years, management and coordination of events and processes occurring in local communities have gained much prominence. Stoker (2011) suggested that these functions appeared in response to changes in lifestyle and complexity of modern world as well as resulting challenges. A special challenge consists in making an attempt to undertake activities in the public sphere that entail a transfer from difficult, but purely technical, tasks to problems defined as soft wiring ones, where the society is involved in co-governance and suitable conditions are created for a local community to live and function in a stable environment.

Changing expectations and needs of local communities can be influenced by trends developing on a global scale. Dissemination of information strengthens democracy, as it raises the community's expectations and pressure on local institutions. While striving to meet these challenges, local administration will have to undertake efforts towards building institutional capacities (Savitch, 1998). But Hardt (2013) indicated, that in very complex systems implemented small changes can lead to very diverse results. What is important is to heuristically search for these elements of the good governance menu that have the highest potential to make an impact. Instead of a long list of things to be done at once, it is better to have a hierarchical (in a time-bound perspective) list of initiatives that can play the role of a catalyst for better governance.

For a territorial government to sustain development, it is necessary to achieve an adequate level of efficiency of executive actions, arising from appropriate administrative capacity. The concepts started to shape not only national but also local administrations to become more efficient and effective is New Public Management (Ter Bogt, 2008). Management reforms are mainly concerned with the service delivery function of the local public administration. Another means of the management reform is the opening up of the local political arena for new actors being integrated in the local decision making and service delivery process. Most countries started a series of

management reforms at different time points. The processes were mostly not initiated by the municipalities themselves (Vetter & Kersting, 2003) and the precise motives for these changes may vary. Not all authors are convinced that changes in government organizations are mainly intended to increase economic efficiency and effectiveness (Ter Bogt, 2008).

Creating effective and efficient institutions can be supported by continuous research directed towards analyzing the concept, process of shaping, strategy of action, monitoring and evaluating the capacity of institutions (Vincent & Stephen, 2015). Actions aiming at creating the potential of institutions can be helpful in the successful use and allocation of an institution's resources. Thus, building an institution's capacity implicates actions which reinforce the knowledge, abilities and skills, leading to the improvement of institutional structures and processes in a way that will enable the organization to successfully perform its mission and objectives in a sustainable manner.

As Torres *et al.* (2011) emphasize, local government in all EU countries participates in the development of systems and tools which measure the effects of its work. Such measures are thought to be an important element, serving the betterment of effectiveness and efficiency.

Wollmann (2012) noticed, in his research conducted among seven European countries, that in internal administrative re-organization, commonalities have emerge as significant administrative shifts have been effected by the introduction of managerialist concepts and tools that aim at overcoming the traditional bureaucratic scheme in making local administration organizationally and procedurally more flexible and psychologically more cost-conscious. Yet, the timing, range and focus of internal re-organization have distinctly differed from country to country, due to country-specific features, essentially rooted by historical institutionalism.

However, as Bel and Fageta (2007) point out, local self-governments attempting to improve the efficiency of services (including through their privatization) must take into account certain barriers, including fiscal stress and interest group pressures. The influence of institutional factors (rules, values, habits, power, internal and external pressure) on change processes in organizations, confirm arguments in sociological institutional literature (Scott, 2008). Local governments are also subject to negotiation and change when specific actors accumulate relatively more power and push for the modification of rules and regulations, both in their legal and in their informal form (Gómez *et al.*, 2016; Herrera, 2016).

The organization, in order to be able to efficiently meet its mission and goals in a sustainable way, has to build capacity, including activities that strengthen and improve institutional structures and processes (Vincent &

Stephen, 2015). In general, local governance systems can be divided into two groups: governments which try to perform all their functions in a sustainable way, and those which strive towards efficiency in some selected functions (Stoker, 2011). This situation can be influenced by NPM-like management changes and its effects (often caused by external and/or internal pressures): a striving to increase economic efficiency and effectiveness, mimicry, a desire for external legitimation, a gap between expected and achieved effects (lead to a 'change automatism') (Ter Bogt, 2008). However, there is a lack of current scientific research results enabling an in-depth diagnosis of such behavior.

The question also arises whether the activities of local authorities are conditioned by economic rationality, as well as political and social (Ter Bogt, 2008; Herrera, 2016).

## **Research methodology**

An accumulated synthetic index of institutional efficiency and partial indices of efficiency in five areas: economic and spatial, financial, administrative, human resources management in municipal offices, provision of social, cultural and educational services, were derived from data acquired from public statistics (Local Data Bank) and from direct investigations conducted in 1220 municipalities out of 2479 ones present in Poland. The data was obtained primarily from public statistics — taking into account formal and substantive considerations (primarily the continuity of data, and at the same time their quality and credibility). To exclude variables with excessively strong, mutual relationships, an analysis of correlation between variables was conducted.

When selecting the variables for the planned analyses, the following features of the measures were taken into account: universality, measurability, availability, quality, profitability of obtaining, interpretability and the manner of impact (positive/negative).

An attempt was made to acquire information from representatives of all types of municipalities (urban, rural, urban-rural), so as to achieve concordance between the structure of the analyzed community with the structure of the general population of municipalities in Poland, required at the assumed level of trust 0.95 and estimated fraction volume 0.5, an error of responses from the sample obtained was 0.02. To verify whether the distribution of municipalities according to the types (urban, rural, urban-rural) obtained in the study differed significantly from the ones in the population (at the level of provinces), a chi-square test was performed. In each case, the result of

this test was not significant statistically ( $p > 0.1$ ), indicative of the lack of significant differences between the distribution observed (in the analyzed sample) and expected (present in the population).

A survey was carried out in 2015/2016 and the questionnaire was addressed to local authorities, requesting the data needed to calculate the synthetic index of institutional efficiency. More specifically, the purpose was to learn about the procedures, organization of processes, applied tools and their advancement, to assess the effect of implemented activities in the following areas: economic and spatial, financial, administrative, human resources management in municipal offices, provision of social, cultural and educational services. Responses to particular questions were assigned point scores. Sums of points obtained from individual replies and average values of selected statistical indicators (from the Central Statistical Office, GUS) pertaining to municipalities served to calculate values of the efficiency index for each local government studied. First, partial efficiency indicators were calculated, separately for each area of activity (Table 1).

The results of the partial indices of efficiency of municipalities in the above areas served to calculate an index of the efficiency of municipalities (SPR). This index was calculated from the formula:

$$SPR = w_1S_1 + w_2S_2 + w_3S_3 + w_4S_4 + w_5S_5 \quad (1)$$

where:

SPR – efficiency index of municipalities

$S_1$  – efficiency index of municipalities in area 1

$S_2$  – efficiency index of municipalities in area 2

$S_3$  – efficiency index of municipalities in area 3

$S_4$  – efficiency index of municipalities in area 4

$S_5$  – efficiency index of municipalities in area 5

$w_1 = 25\%$ ,  $w_2 = 25\%$ ,  $w_3 = 15\%$ ,  $w_4 = 20\%$ ,  $w_5 = 15\%$  – weights determined in line with an expert opinion approach.

According to the research methodology and based on the calculated values of partial indices of efficiency in five basic areas of activity, as well as the differences between these component values, the stability index of local governments was calculated, and its values provide the information whether the local governments perform their tasks in particular areas in a stable manner.

Considering the fact that a municipality is stable when differences between the partial indices of its efficiency in individual areas are the smallest, differences between pairs of efficiency indices were calculated (Table 2).



The variables thus obtained served to achieve the index of stability of a given municipality, according to the Hellwig's method, which belongs to model formulas of the aggregation of variables, based on a constructed model object, i.e. a standard, which is created on the basis of optimal values of variables (most favorable from the whole set). The Hellwig's method is often used in studies at the regional level, incl. to assess the spatial differentiation of the level of socio-economic development (Miłek, 2018), including agricultural areas (Pomianek, 2014), the functioning of special economic zones (Persiala, 2019), the quality of life (Nowak, 2018), or the level of unemployment (Tatarczak & Boichuk, 2018).

Values of the variables were submitted to standardization, after which the best standard was determined, in which the desired values of the variables are the maximum ones. The Euclidean distance was calculated between individual observations (municipalities) and the standard. The synthetic measure, that is the municipality's stability index (ST), was finally defined as:

$$ST = 1 - \frac{d_{oi}}{d_0} \quad (2)$$

where:

$$d_0 = \bar{d}_0 + 2S(d_0) \quad (3)$$

whereas:

$$d_0 = \frac{1}{n} \sum_{i=1}^n d_{i0}; S(d_0) = \left[ \frac{1}{n} \sum_{i=1}^n (d_{i0} - \bar{d}_0)^2 \right]^{\frac{1}{2}} \quad (4)$$

The synthetic measure obtained with the Hellwig's method typically achieves a value within the interval  $\langle 0; 1 \rangle$ . The smaller the distance of an object from the standard, the higher the value of this synthetic measure. If there are many divergent values, the value of the synthetic measure can go beyond the assumed interval. This is what happened in the case of the calculated stability index. The stability index for the analyzed group of municipalities achieved values in an interval of  $\langle -0.35; 0.78 \rangle$ . Thus, the values of the synthetic variable were normalized in an attempt to obtain values within the interval  $\langle 0; 1 \rangle$ .

In an effort to verify the research hypothesis, a zero hypothesis (H0) and an alternative hypothesis (H1) were formulated. The zero hypothesis assumed that there is no relationship between the institutional efficiency of

local governments and stability of the tasks they execute, whereas the alternative hypothesis assumed that there was a relationship between the institutional efficiency of local governments and stability of the tasks they performed. Next, in line with the adopted procedure, correlation was determined between the index of institutional efficiency and the index of stability, calculating the Pearson's coefficient for this purpose.

The calculated efficiency and stability indexes were subjected to regression analysis in order to find the significance and direction of the relationship between the level of stability and institutional efficiency. In order to investigate the commune type effect, zero-one dichotomous variables were used in the model. Taking into account all municipalities in general, the parameters of econometric models were estimated.

## **Results and discussion**

### *The stability of a municipality in Poland*

Generally speaking, local governments in Poland are highly diverse. The underlying reasons are the current socio-economic potential as well as the historical and cultural background of municipalities. This specific set of conditions can have a bearing on particular areas of activities pursued by Polish municipalities.

The data collated in Table 3 show that the average value of the stability index in Poland was around 0.5721. Among the analyzed municipalities, some were characterized by very low stability, which was a consequence of big differences between values of the partial indices of efficiency. It can therefore be concluded that local governments executed their tasks within individual areas of activity to a highly different degree. An opposite situation was found when local governments were able to perform their tasks in all the areas of activity in a sustainable way.

While analyzing the distribution of values of the stability index, based on the data plotted in Figure 1, it can be noticed that the vast majority of the municipalities achieved stability in performing tasks in their basic roles on a level close to the average value of the said index.

The investigated group of municipalities, with regard to the values of the stability index, was distinguished by relatively large dispersion — considering the position of the maximum and minimum values relative to the median (Figure 2). However, it is worth noticing that the number of municipalities largely divergent from the median value in terms of scoring much higher values was greater than the number of municipalities which scored

the lowest. Based on the data obtained, it can be concluded that the distribution of values of the stability index was symmetrical.

More detailed analysis showed that the analyzed set of municipalities was characterized by relatively low dispersion (standard deviation 0.1313) and considerable variability (the variability coefficient 0.2295) with respect to the values of the stability index. Although the value of the asymmetry coefficient indicates a slight right-sided skewness of the stability index, and the value of the kurtosis coefficient confirms the concentration of values of the index around the mean value.

Among the analyzed Polish provinces, despite certain discrepancy between minimum and maximum values of the stability index, differences between particular municipalities were not so considerable as to be reflected by large differences in the average values of the index derived for the provinces. Both these values and the ones calculated for the remaining provinces justify the claim that they all belong to a group of provinces characterized by moderate stability (values in the range of 0.4408 to 0.7034).

The data show some aggregations of municipalities with relatively high values of the stability index in certain provinces, i.e. in the western and south-western parts of Poland and the Province of Warmia and Mazury and groups of municipalities with low values of this index (mostly, the eastern part of Poland).

### *The stability vs. efficiency of municipalities in Poland*

The stability of local governments was also analyzed in comparison to their type (urban, rural or urban-rural municipalities). The results, collated in Table 3, show that there were no substantial differences in the average values of the stability index between these three types of municipalities. However, it is worth noticing that the minimum value in urban municipalities (0.3122) was significantly higher than in the other two groups (0.1367 for rural municipalities and 0.0000 for urban-rural ones), while the maximum values of the stability index were rather similar (0.9020 in rural municipalities and 1.000 in urban-rural ones).

The calculated values of the stability index and the efficiency index subsequently substantiated an analysis whose aim was to determine the differentiation of municipalities in terms of both indices within individual intervals of their values. As the data contained in Table 4 suggest, most of the analyzed municipalities (195 — 15.98%) achieved a medium-low level of both institutional efficiency and stability. Thus, these municipalities per-

form their tasks with various degrees of intensity in particular areas of activity, but their efforts do not always generate the expected results.

When searching for an increase in institutional efficiency from low to medium-low and medium-high (at low stability), a group of 109 municipalities was distinguished. They are the municipalities where local governments perform their tasks with increasingly better outputs. However, these efforts are not undertaken equally in all areas of activity. Furthermore, considering a rise in stability from low to medium-low and medium-high, at low institutional efficiency (156 municipalities), 47 more municipalities were identified. These municipalities perform their tasks in a more sustainable manner than the former group, but their efforts generate results on the lowest level.

Noteworthy, there were only 7 municipalities characterized by low institutional efficiency and simultaneous high stability, in comparison to 30 municipalities with high efficiency and low stability. Out of 1220 municipalities which participated in the study, only 41 were characterized by both high institutional efficiency and high degree of stability. These are such local governments which not only execute their tasks with the same degree of intensity in all areas of activity, but also achieve outputs on the highest level among all the analyzed municipalities.

As one of the research objectives was to try and assess interactions between institutional efficiency of municipalities and stability of tasks performed, the dispersion of the analyzed municipalities with regard to the indices of efficiency and stability has been presented graphically (Figure 3). According to these data, as values of the institutional efficiency index and stability index increase, the dispersion between the analyzed municipalities grew larger. However, the said dispersion was more distinctly seen at higher values of the efficiency index rather than at higher values of the stability index.

Taking into account the individual, separated areas of efficiency, it was found that the financial area was characterized by the highest efficiency, in which the average value of the synthetic measure ( $S_2$ ) was 0.4712. The lowest average value of the synthetic measure was recorded in the sphere of socio-cultural-educational services ( $S_5 = 0.1508$ ) and the number of communes with the  $S_5$  index below the average was 665.

The analysis of descriptive statistics of partial indicators ( $S_1$ - $S_5$ ) for individual areas of efficiency also showed that the most diverse sphere was human resources management in the commune office. In the scale of the entire sample, this dimension of municipal activity was characterized by the highest range (0.8148).

As the data comprised in Table 5 suggest, there was a positive (albeit weak) and statistically significant correlation (the Pearson's coefficient equal 0.170\*\*) between the above indices, illustrating the functioning of local governments and their performance of tasks.

Based on the results, the zero hypothesis (H0), which assumed the lack of relationship between institutional efficiency of local governments and stability of tasks they performed, was discarded to the advantage of the alternative hypothesis (H1), which assumed that there was a relationship between institutional efficiency of local governments and their stable performance of tasks.

The results obtained from the sample composed of all 2 479 municipalities in total (Table 6) indicate a statistically more significant effect of the stability index on the value of the institutional efficiency index computed for the analyzed municipalities at the level of significance equal 0.05. Values of the regression coefficients mean that an increase in the stability index by 0.1 would cause an increase in the efficiency index, according to the estimated model, by an average of 0.00414, 0.00427 and 0.00799.

Considering the above models, the effect of the type of a municipality (urban, rural, urban-rural) becomes evident. The values of the parameters estimated at variables signifying an urban or a rural municipality were statistically significant, suggesting that the efficiency index for urban municipalities is 0.0581 higher on average than for the other two types of communities, whereas the value of this index calculated for rural municipalities is on average 0.0313 lower than the average value for the other two types of communities. When a municipality is classified as an urban-rural one, this variable does not have a significant influence on the efficiency-stability relationship. However, it is worth noticing that the above cross-sectional models explain the variability of the analyzed efficiency index on a significant albeit low level. The determination coefficient for the analyzed efficiency index in the three models of municipalities (urban, rural and urban-rural) equals 11.2%, 7.9% and 2.9%, respectively.

The results of our estimations of the linear regression equations in the particular types of municipalities confirm the above relationships (Table 7). An increase in efficiency induced by the improved stability was the highest in urban municipalities and the lowest in rural ones. The estimated parameters for urban and rural municipalities are 0.0624 and 0.0346, respectively, and are statistically significant at the level of significance equal 0.1. In urban-rural municipalities, there was a negative, statistically non-significant dependence between the efficiency and stability indices.

The results obtained for the sample of all municipalities together (Table 8) point to the statistically significant (at the significance level of 0.05) effect of the institutional efficiency index on the stability index of municipalities. Values of the calculated regression coefficients mean that an increase in the efficiency index by 0.1 would lead to an increase in the stability index by an average of 0.01833, 0.01747 and 0.03338, depending on the model of a municipality. Evaluations of the parameters at the variables indicating an urban, rural or urban-rural municipality were statistically significant, which implicates the differentiation in the stability index depending on the type of a municipality. Estimates of these parameters show that the stability index for urban municipalities was on average 0.0997 higher than for the other two types of municipalities, while being by 0.0864 lower for rural municipalities than for the other two types. The same index was on average 0.0488 higher for urban-rural municipalities than its average value derived for the other two types of communities. The cross-sectional models explain the variability of the stability index on a low level of determination, which equaled 8.5%, 12.2% and 5.4% according to the applied variability representing the type of municipalities.

The estimated direction coefficients of regression equations were statistically significant for urban and rural municipalities at the significance level of 0.1 (Table 9). An increase in stability induced by improved efficiency was the highest in urban municipalities (0.3138) and the lowest in rural municipalities (0.1376). In urban-rural municipalities, there was a negative, statistically non-significant dependence of the stability index on the efficiency index.

Improved stability of the tasks performed by local governments serves to improve the efficiency of their functioning. Thus, a clear tendency appears where it is more beneficial for local governments to raise stability by attaining some improvement in these areas where it is low, but not at the expense of those areas where it is high. Noteworthy is also the significant and stronger influence of the policy of local authorities connected with the improvement of the efficiency of performed tasks on their stability. Hence, the prevalent situation is the one where local governments raise the efficiency of performed tasks in individual domains, but this does not impair the performance of tasks from one domain for the sake of attaining some improvement in another one.

The obtained results cannot (due to the originality of the adopted research methodology and spatial scope) be compared with any other previous studies for Poland or any international studies. Therefore, the added value of the research carried out as part of the project was, *inter alia*, constructing an institutional efficiency and stability index on the basis of the

collected primary and secondary data. An evaluation questionnaire was also developed: *Institutional efficiency of cities and communes*<sup>1</sup>, which can help local and higher level authorities to conduct comparative analyses and diagnose good practices to improve institutional efficiency and stability. The assessment of institutional efficiency and stability of the tasks may be useful in the context of searching for new factors of local development, not only the resources that a commune has at its disposal, e.g. due to its location.

## Conclusions

The analysis of the research results justifies the claim that — analogously to the reviewed literature — there are local governments which strive to perform their tasks in particular areas of activity with equal involvement, and there are such municipalities whose authorities concentrate on selected areas of activity. A reflection of this situation is the differentiation of the calculated values of the stability index. The analyses have also confirmed the hypothesis assuming that there is a relationship between the institutional efficiency of local governments and stability of the tasks they performed. These dependences varied in individual provinces of Poland. It is more beneficial for local governments to raise stability by attaining some improvement in these areas where it is low, but not at the expense of those areas where it is high.

A specific group of municipalities, with respect to the observed tendencies, consisted of urban-rural communities. One possible reason is their characteristic, complex and diverse structure, which underlines the functions of such municipalities. Urban-rural municipalities cover both urban and rural areas, and therefore must meet the challenge of performing their tasks in conditions characterized by high spatial, administrative as well as social and economic diversity. And although they are responsible for the same general administration tasks as other municipalities, the authorities of mixed municipalities, urban and rural ones, must take into account this specific nature of their communities while organizing the administrative apparatus.

The results of the conducted analyses and direct research would certainly be more useful if it were possible to relate them to the research results of other authors. Therefore, in order to enable such comparisons to be made over time, studies were conducted in the following years. However, the

---

<sup>1</sup> [http://www.uwm.edu.pl/konferencjakpgir/pliki/raport\\_z\\_projektu.pdf](http://www.uwm.edu.pl/konferencjakpgir/pliki/raport_z_projektu.pdf)

limitation of the research in the following years is that it is impossible to ensure the participation of the same communes in them.

Taking into account the above conclusions in further research, it is necessary to continue the diagnosis of institutional efficiency and stability of tasks performed by communes. The search for effective actions that will allow to increase the efficiency and stability of tasks performed by local authorities will also be an important challenge. In order for the local government to stimulate development, an appropriate level of efficiency and stability is necessary. Such challenges require a lot of activity of local governments. Their activities take place in conditions of systematic shortage of financial and other resources, including property and human resources. Therefore, local governments perform their tasks often in conditions shaped by the necessity to make problematic decisions that concern not only the definition of priority goals, but also the provision of the necessary resources and the necessary actions aimed at efficient achievement of the goals. The limited resources should not, however, be a reason for the implementation of tasks to a limited extent, or for their elimination.

## References

- Acemoglu, D. (2008). *Introduction to modern economic growth*. Princeton: Princeton University Press.
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review*, 91(5). doi: 10.1257/aer.91.5.1369.
- Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as the fundamental cause of long-run growth. In P. Aghion & S. N. Durlauf (Eds.). *Handbook of economic growth*. Amsterdam: North Holland.
- Afonso, A., & Fernandes, S. (2008). Assessing and explaining the relative efficiency of local government. *Journal of Socio-Economics*, 37(5). doi: 10.1016/j.socec.2007.03.007.
- Álvarez-Díaz, M., & Miguez, G. C. (2008). The quality of institutions: a genetic programming approach. *Economic Modelling*, 25(1). doi: 10.1016/j.econmod.2007.05.001.
- Andreula, N., & Chong, A. (2016). Do good institutions improve fiscal transparency? *Economics of Governance*, 17. doi: 10.1007/s10101-015-0175-8.
- Balcerzak, A. P., & Pietrzak, M. B. (2017). Human development and quality of institutions in highly developed countries. In M. H. Bilgin, H. Danis, E. Demir, and U. Can (Eds.). *Financial environment and business development. Proceedings of the 16th Eurasia Business and Economics Society*. Springer International Publishing. doi: 10.1007/978-3-31939919-5\_18.



- Balcerzak, A. P., & Pietrzak, M. B. (2016). Quality of institutions for knowledge-based economy within new institutional economics framework. Multiple criteria decision analysis for European countries in the years 2000–2013. *Economics & Sociology*, 9(4). doi: 10.14254/2071-789X.2016/9-4/4.
- Balcerzak, A. P. (2020). Quality of institutions in the European Union countries. Application of TOPSIS based on entropy measure for objective weighting. *Acta Polytechnica Hungarica*, 17(1). doi: <https://doi.org/10.12700/APH.17.1.2020.1>.
- Bel, G., & Fegeda, X. (2007). Why do local government privatise public services? A survey of empirical studies. *Local Government Studies*, 33(4). doi: 10.1080/03003930701417528.
- Breen, M., & Gillanders, R. (2012). Corruption, institutions and regulation. *Economics of Governance*, 13. doi: 10.1007/s10101-012-0111-0.
- Chong, A., & Calderón, C. (2000). Institutional quality and poverty measures in a cross-section of countries. *Economics of Governance*, 1. doi: 10.1007/PL00021678.
- Chousa, J. P., Khan, H. A., Melikyan, D., & Tamazian A. (2005). Assessing institutional efficiency, growth and integration. *Emerging Markets Review*, 6(1). doi: 10.1016/j.ememar.2004.09.004.
- Evans, R., & Harding, A. (1997). Regionalisation, regional institutions and economic development. *Policy and Politics*, 25(1). doi: 10.1332/030557397782213765.
- Faguet, J. P. (2004). Does decentralization increase government responsiveness to local needs? Evidence from Bolivia. *Journal of Public Economics*, 88(3-4). doi: 10.1016/S0047-2727(02)00185-8.
- Fried, R. C., & Rabinovitz, F. F. (1980). *Comparative urban politics: a performance approach*. Prentice Hall.
- Geys, B. (2006). Looking across borders: a test of spatial policy interdependence using local government efficiency ratings. *Journal of Urban Economics*, 60(3). doi: 10.1016/j.jue.2006.04.002.
- Gibbs, D., Jonas, A., Reimer, S., & Spooner, D. (2001). Governance, institutional capacity and partnerships in local economic development: theoretical issues and empirical evidence from the Humber sub-region. *Transactions of the Institute of British Geographers*, 26(1). doi: 10.1111/1475-5661.00008.
- Gómez, G. M., Knorringa, P., & Corradi, A. A. (2016). Introduction. In G. M. Gomez & P. Knorringa (Eds.). *Local governance, economic development and institution*. Palgrave Macmillan.
- Grigoli, F., & Mills, Z. (2014). Institutions and public investment: an empirical analysis. *Economics of Governance*, 15. doi: 10.1007/s10101-013-0137-y.
- Hall, R., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others. *Quarterly Journal of Economics*, 114(1). doi: 10.1162/003355399555954.
- Hardt, Ł. (2013). The idea of good (enough) governance. The view from complexity economics. *Argumenta Oeconomica*, 2(31).

- Herrera, E. W. (2016). Governance and development: the importance of legitimacy and institutional change. In G. M. Gomez & P. Knorringa (Eds.), *Local governance, economic development and institution*. Palgrave Macmillan.
- Ignacy, J., & Kopyściański, T. (2011). Selection criteria of strategic goals for local governments. *Argumenta Oeconomica*, 2(27).
- Kaufmann, D., & Kraay, A. (2002). *Growth without governance*. Washington DC: The World Bank.
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2003). *Governance matters III. Governance indicators for 1996-2002*. Washington DC: The World Bank.
- Kaufmann, D., Kraay, A., & Zoido-Lobaton, P. (1999). Governance matters. Policy research. *Working Paper, 2196*, doi: 10.1596/1813-9450-2196.
- Knack, S., & Keefer, P. (1995). Institutions and economic performance: cross-country tests using alternative institutional measures. *Economics and Politics*, 7(3). doi: 10.1111/j.1468-0343.1995.tb00111.x.
- Knack, S., & Keefer, P. (1997). Does social capital have an economic pay-off? A cross-country investigation. *Quarterly Journal of Economics*, 112(4). doi: 10.1162/003355300555475.
- Law, S. H., & Azman-Saini, W. N. W. (2012). Institutional quality, governance, and financial development. *Economics of Governance*, 13. doi: 10.1007/s10101-012-0112-z.
- MacLeod, G., & Goodwin, M. (1999). Reconstructing an urban and regional political economy: on the state, politics, scale and explanation. *Political Geography*, 18(6). doi: 10.1016/S0962-6298(99)00014-1.
- Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics*, 110(3). doi: 10.2307/2946696.
- Mitek, D. (2018). Spatial differentiation in the social and economic development level in Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 13(3). doi: 10.24136/eq.2018.024.
- Nowak, P. (2018). Regional variety in quality of life in Poland. *Oeconomia Copernicana*, 9(3). doi: 10.24136/oc.2018.019.
- Piersiala, L. (2019). The usage pattern of development method to assess the functioning of special economic zones: the case of Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 14(1). doi: 10.24136/eq.2019.008.
- Pomianek, I. (2014). Socio-economic development of agricultural problem areas in Poland. *Economics & Sociology*, 7(2). doi: 10.14254/2071-789X.2014/7-2/18.
- Putnam, R. D., Leonardi, R. & Nanetti R. Y. (1995). *Making democracy work: civic traditions in modern Italy*. Princeton New Jersey: Princeton University Press.
- Rodric, D. (2003). *In search of prosperity. Analytic narratives on economic growth*. Princeton and Oxford: Princeton University Press.
- Rodric, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: the primacy of institution over geography and integration in economic development. *Journal of Economic Growth*, 9(2). doi: 10.1023/B:JOEG.0000031425.72248.85.

- Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict, and growth collapses. *Journal of Economic Growth*, 4(4). doi: 10.1023/A:1009863208706.
- Savitch, H. V. (1998). Global challenge and institutional capacity or, how we can refit local administration for the next century. *Administration & Society*, 30(3). doi: 10.1177/0095399798303002.
- Scott, W. R. (2008). Approaching adulthood: the maturing of institutional theory. *Theory and Society*, 37.
- Stoker, G. (2011). Was local governance such a good idea? A global comparative perspective. *Public Administration*, 89(1). doi: 10.1111/j.1467-9299.2011.01900.x.
- Tataczak, A., & Boichuk, O. (2018). The multivariate techniques in evaluation of unemployment analysis of Polish regions. *Oeconomia Copernicana*, 9(3). doi: 10.24136/oc.2018.018.
- Ter Bogt, H. J. (2008). Recent and future management changes in local government: continuing focus on rationality and efficiency? *Financial Accountability & Management*, 24(1). doi: 10.1111/j.1468-0408.2008.00442.x.
- Torres, L., Pina, V., & Yetano, A. (2011). Performance measurement in Spanish local governments. A cross-case comparison study. *Public Administration*, 89(3). doi: 10.1111/j.1467-9299.2011.01919.x.
- Vetter, A., & Kersting, N. (2003). Democracy versus efficiency? comparing local government reform across Europe. In N. Kersting & A. Vetter (Eds.). *Reforming local government in Europe. Closing the gap between democracy and efficiency*. Wiesbaden: VS Verlag für Sozialwissenschaften. doi: 10.1007/978-3-663-11258-71.
- Vincent, C., & Stephen, C. (2015). Local government capacity building and development: lessons, challenges and opportunities. *Journal of Political Sciences & Public Affairs*, 3(149).
- Williams, D. (1997). Strategies of multinational enterprises and the development of the central and eastern European economies. *European Business Review*, 97(3). doi: 10.1108/09555349710167549.
- Wollmann, H. (2012). Local government reforms in (seven) European countries: between convergent and divergent, conflicting and complementary developments. *Local Government Studies*, 38(1). doi: 10.1080/0300393042000318030.
- Woolcock, M., & Narayan, D. (2000). Social capital: implication for development theory, research and policy. *World Bank Research Observer*, 15(2).

## **Acknowledgments**

The research was undertaken as part of the project “Institutional Efficiency vs. Local Economic Development – Determinants and Interactions”. It was financed from the funds of the National Centre of Science, according to decision number DEC-2013/09/B/HS4/03039.

## Annex

**Table 1.** Efficiency index for municipalities

Formula and variables	
1.	Area of efficiency: economic and spatial
	$S_1 = \frac{N_1 + N_2 + NP_3}{3}, \in (0; 1)$
$N_1$	– normalised average value of the number of foundations, associations and social organisations per 10,000 residents in the municipality in years 2009-2013
$N_2$	– normalised average value of the percentage of the municipality's geodesic area covered by spatial management plans in years 2007-2013
$NP_3$	– normalised sum of points scored from the questionnaire's part dedicated to area 1
2.	Area of efficiency: financial
	$S_2 = \frac{N_4 + N_5 + N_6 + NP_7}{4}, \in (0; 1)$
$N_4$	– reversed value of the normalised average value of public debt in the municipalities in years 2007-2013
$N_5$	– normalised average value of the municipality's budget result in years 2007-2013
$N_6$	– normalised average value of funds obtained from the EU as a % of the municipality's revenues in years 2007-2013
$NP_7$	– normalised sums of points scored from the questionnaire's part dedicated to area 2
3.	Area of efficiency: administration
	$S_3 = \frac{N_8 + N_9 + N_{10} + N_{11} + NP_{12}}{5}, \in (0; 1)$
$N_8$	– normalised average participation in elections in a municipality in years 2006-2014
$N_9$	– normalised average value of expenditure for public administration in a municipality in years 2007-2013
$N_{10}$	– reversed value of the normalised average number of referendums (to remove a local government council, mayor) in a municipality in years 2007-2013
$N_{11}$	– normalised average value of the percentage of councillors with higher education in a municipality in years 2007-2013
$NP_{12}$	– normalised sum of points scored from the questionnaire's part dedicated to area 3
4.	Area of efficiency: management of human resources in the municipal office
	$S_4 = NP_{13}, \in (0; 1)$
$NP_{13}$	– normalised sum of points scored from the questionnaire's part dedicated to area 4
5.	Area of efficiency: provided social, cultural and educational services
	$S_5 = \frac{N_{14} + N_{15} + N_{16} + N_{17} + N_{18} + N_{19} + NP_{20}}{7}, \in (0; 1)$
$N_{14}$	– normalised average value of expenditure for physical culture and sports per 1 resident in a municipality in years 2007-2013
$N_{15}$	– normalised average value of expenditure for education per 1 resident in a municipality in years 2007-2013
$N_{16}$	– normalised average value of the number of places in preschools relative to the number of children aged 3-6 in a municipality in years 2007-2013
$N_{17}$	– normalised average number of places in crèches per 100 children aged 0-2 years in years 2007-2013
$N_{18}$	– normalised average value of expenditure for health care per 1 resident in a municipality in years 2007-2013
$N_{19}$	– normalised average value of expenditure for welfare and social policy per 1 resident in years 2007-2013
$NP_{20}$	– normalised sum of points scored from the questionnaire's part dedicated to area 5

Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.

**Table 2.** Difference between values of the indices of a municipality's efficiency

Variables	Difference
$d_{1-2} =  S_1 - S_2 $	in area 1 and area 2
$d_{1-3} =  S_1 - S_3 $	in area 1 and area 3
$d_{1-4} =  S_1 - S_4 $	in area 1 and area 4
$d_{1-5} =  S_1 - S_5 $	in area 1 and area 5
$d_{2-3} =  S_2 - S_3 $	in area 2 and area 3
$d_{2-4} =  S_2 - S_4 $	in area 2 and area 4
$d_{2-5} =  S_2 - S_5 $	in area 2 and area 5
$d_{3-4} =  S_3 - S_4 $	in area 3 and area 4
$d_{3-5} =  S_3 - S_5 $	in area 3 and area 5
$d_{4-5} =  S_4 - S_5 $	in area 4 and area 5

Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.

**Table 3.** Distribution of values of the stability index by provinces and type of municipalities

Type of a muninipality	Average	Min	Max	SD	V	A	K-3
POLAND	0.5721	0.0000	1.0000	0.1313	0.2295	0.1400	0.3260
urban	0.6697	0.3122	0.9919	0.1383	0.2065	-0.0660	-0.3630
rural	0.5380	0.1367	0.9020	0.1161	0.2158	0.1010	0.2730
urban-rural	0.6110	0.0000	1.0000	0.1297	0.2123	-0.2990	1.3900

Note: Comments: V – the variability coefficient; A – the asymmetry coefficient; K – the kurtosis coefficient

Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.

**Table 4.** Structure of municipalities — efficiency index vs. stability index\*

Efficiency	Stability				Sum (rows)
	low	medium-low	medium-high	high	
low	41	95	61	7	204
medium-low	67	195	141	50	453
medium-high	42	103	136	91	372
high	30	58	62	41	191
Sum (columns)	180	451	400	189	1220

Note: \* Intervals of the stability and efficiency index values were determined according to the formula: low stability (efficiency): (min. value; average – SD), medium-low stability (efficiency): (average – SD; average), medium-high stability (efficiency): (average; average + SD), high stability (efficiency): (average + SD; max. value).

Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.

**Table 5.** Correlation between the index of institutional efficiency and the index of stability

Type of a muninipality	The Pearson's coefficient equal
POLAND	0.170**
urban	0.140
rural	0.069
urban-rural	-0.013

Note: \*\* significant correlation on the level 0.01; \* significant correlation on the level 0.05

Source: the author, based on data from the Local Data bank, Central Statistical Office and direct research.

**Table 6.** Results of the estimation of the model for the efficiency index ( $y_i$ ) including the impact of the type of municipalities

Variable	Estimate of parameter	t statistics	p
<b>URBAN MUNICIPALITY</b>			
constant	0.2699	34.61	0.000
stability – $x_{i1}$	0.0414	3.05	0.002
town – $x_{i2}$	0.0581	10.72	0.000
$R^2 = 0.112$ ; $S_\xi = 0.059$ ; $V_\xi = 0.199$ ; $n = 1220$			
<b>RURAL MUNICIPALITY</b>			
constant	0.2960	31.64	0.000
stability – $x_{i1}$	0.0427	3.03	0.002
village – $x_{i2}$	-0.0313	-8.15	0.000
$R^2 = 0.079$ ; $S_\xi = 0.061$ ; $V_\xi = 0.200$ ; $n = 1220$			
<b>URBAN-RURAL MUNICIPALITY</b>			
constant	0.2541	31.73	0.000
stability – $x_{i1}$	0.0799	5.77	0.000
town-village – $x_{i2}$	0.0037	0.87	0.382
$R^2 = 0.029$ ; $S_\xi = 0.062$ ; $V_\xi = 0.207$ ; $n = 1220$			

Note:  $R^2$  – determination coefficient,  $S_\xi$  – standard deviations of residuals,  $V_\xi$  – random variability coefficient,  $n$  – number of items in the sample

**Table 7.** Results of the estimation of the model for the efficiency index ( $y_i$ ) including the effect of the type of municipality

Variable	Estimate of parameter	t statistics	p
<b>URBAN MUNICIPALITIES</b>			
constant	0.3139	12.65	0.000
stability – $x_{i1}$	0.0624	1.72	0.088
$R^2 = 0.020$ ; $S_\xi = 0.061$ ; $V_\xi = 0.171$ ; $n = 150$			
<b>RURAL MUNICIPALITIES</b>			
constant	0.2691	27.07	0.000
stability – $x_{i1}$	0.0346	1.92	0.055
$R^2 = 0.005$ ; $S_\xi = 0.058$ ; $V_\xi = 0.201$ ; $n = 770$			
<b>URBAN-RURAL</b>			
constant	0.3104	18.12	0.000
stability – $x_{i1}$	-0.0062	-0.22	0.820
$R^2 = 0.000$ ; $S_\xi = 0.061$ ; $V_\xi = 0.203$ ; $n = 300$			

Note:  $R^2$  – determination coefficient,  $S_\xi$  – standard deviations of residuals,  $V_\xi$  – random variability coefficient,  $n$  – number of items in the sample.

**Table 8.** Results of the estimation of the model for the stability index ( $y_i$ ) including the impact of the type of municipalities

Variable	Estimate of parameter	t statistics	p
<b>URBAN MUNICIPALITIES</b>			
constant	0.5047	28.02	0.000
efficiency – $x_{i1}$	0.1833	3.05	0.002
town – $x_{i2}$	0.0997	8.61	0.000
$R^2 = 0.085$ ; $S_\xi = 0.126$ ; $V_\xi = 0.220$ ; $n = 1220$			
<b>RURAL MINICIPALITIES</b>			
constant	0.5741	29.39	0.000
efficiency – $x_{i1}$	0.1747	3.03	0.002
village – $x_{i2}$	-0.0864	-11.39	0.000
$R^2 = 0.122$ ; $S_\xi = 0.123$ ; $V_\xi = 0.215$ ; $n = 1220$			
<b>URBAN-RURAL MUNICIPALITIES</b>			
constant	0.4597	25.85	0.000
efficiency – $x_{i1}$	0.3338	5.77	0.000
town-village – $x_{i2}$	0.0488	5.75	0.000
$R^2 = 0.054$ ; $S_\xi = 0.128$ ; $V_\xi = 0.223$ ; $n = 1220$			

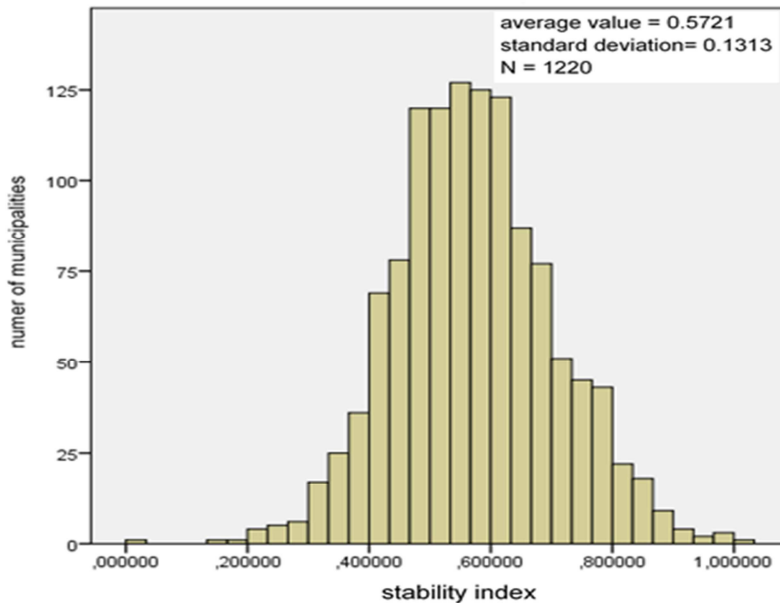
Note:  $R^2$  – determination coefficient,  $S_\xi$  – standard deviations of residuals,  $V_\xi$  – random variability coefficient,  $n$  – number of items in the sample.

**Table 9.** Results of the estimation of the model for the stability index ( $y_i$ ) including the effect of the type of municipality

Variable	Estimate of parameter	t statistics	p
<b>URBAN MUNICIPALITIES</b>			
constant	0.5581	8.47	0.000
efficiency - $x_{it}$	0.3138	1.72	0.088
$R^2 = 0.020$ ; $S_\xi = 0.137$ ; $V_\xi = 0.205$ ; $n = 150$			
<b>RURAL MUNICIPALITIES</b>			
constant	0.4984	23.67	0.000
efficiency - $x_{it}$	0.1376	1.92	0.055
$R^2 = 0.005$ ; $S_\xi = 0.116$ ; $V_\xi = 0.216$ ; $n = 770$			
<b>URBAN-RURAL MUNICIPALITIES</b>			
constant	0.6195	16.20	0.000
efficiency - $x_{it}$	-0.0278	-0.22	0.820
$R^2 = 0.000$ ; $S_\xi = 0.130$ ; $V_\xi = 0.213$ ; $n = 300$			

Note:  $R^2$  – determination coefficient,  $S_\xi$  – standard deviations of residuals,  $V_\xi$  – random variability coefficient,  $n$  – number of items in the sample.

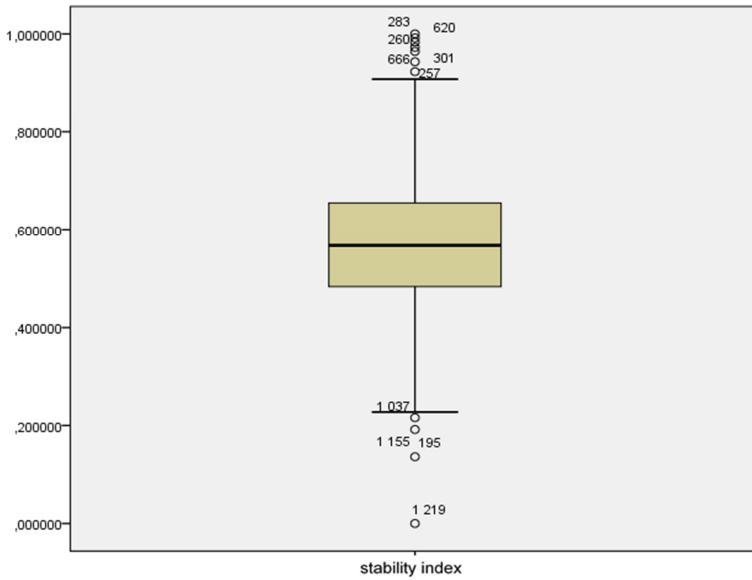
**Figure 1.** Distribution of values of the stability index



Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.

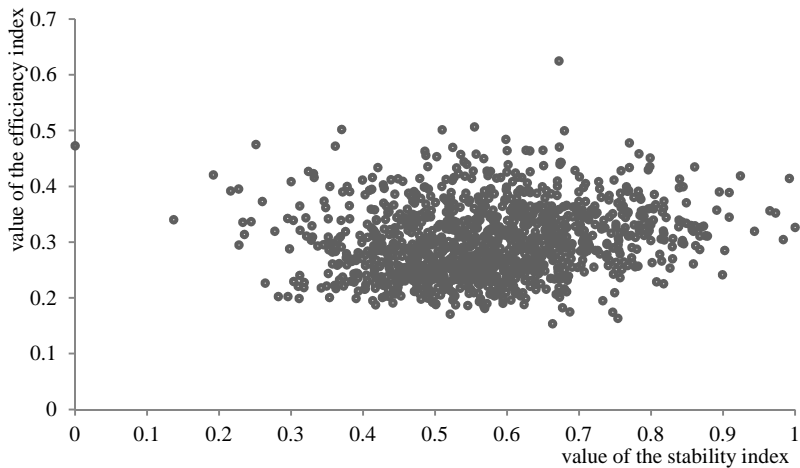


**Figure 2.** Position, dispersion and distribution of the stability index values



Source: own work based on data from the Local Data bank, Central Statistical Office and direct research

**Figure 3.** Dispersion of analysed municipalities in terms of values of the stability index and efficiency index



Source: own work based on data from the Local Data bank, Central Statistical Office and direct research.