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ANALYSIS OF THE DEBT REPAYMENT PERIODS OF LOCAL GOVERNMENTS IN POLAND IN THE YEARS 2007-2016

As a consequence of the global financial crisis which began in 2008, the amount of debt of the local government sector in OECD countries has remarkably increased. In Poland, the debt of local governments has started to fall gradually after reaching its peak in nominal terms in 2014. In this article, we examine how the ability of local governments to repay their debts changed over the 2007-2016 period. The analysis reveals that, despite their considerable nominal indebtedness, local governments had already returned to a strong debt repayment capacity at the end of 2016, observed formerly at the end of 2009. However, at the end of 2016, one in eight local governments had become overindebted in terms of their repayment capacity, despite the rigorous statutory debt limits imposed in Poland. The most worrying situation is in towns with county rights: in 33% of these entities, the debt repayment period is estimated at longer than 15 years. This category represents 33% of Poland's population, and therefore it is of a systemic importance.

Keywords: debt repayment period, local government, operating surplus, public debt.

ANALIZA OKRESU SPŁATY ZADŁUŻENIA POLSKICH JEDNOSTEK SAMORZĄDU TERYTORIALNEGO W LATACH 2007–2016

W konsekwencji światowego kryzysu zapoczątkowanego w 2008 r. zadłużenie sektora jednostek samorządu terytorialnego w krajach OECD znacząco wzrosło. W Polsce nominalne zadłużenie jednostek samorządu terytorialnego osiągnęło najwyższą wartość w 2014 r. W niniejszym artykule analizowane są zmiany w zdolności do spłaty zadłużenia przez jednostki samorządu terytorialnego w latach 2007-2016. Przeprowadzona analiza ukazuje, że mimo wysokiego zadłużenia jednostki samorządu terytorialnego odbudowały przestrzeń do jego obsługi do poziomu z przełomu lat 2009/2010. Wszelako na koniec 2016 r. co ósma jednostka samorządu terytorialnego ma zbyt wysokie zadłużenie, biorąc pod uwagę generowane nadwyżki operacyjne. Najmniej korzystna sytuacja występuje w miastach na prawach powiatu, gdzie co trzeci podmiot ma szacowany ponad 15-letni horyzont spłaty swego zadłużenia.

Słowa kluczowe: okres spłaty długu, jednostki samorządu terytorialnego, nadwyżka operacyjna, dług publiczny.

1. Introduction

According to Stanisław Owsiak, the budget balance of local government units (LGUs) is, “something rather special, which is why balance understood literally never occurs” (Owsiak, 1993). In practice, we observe deviations in the form of budget surplus or budget deficit, which in consequence may lead to indebtedness of a local government unit. Simultaneously, the idea of fiscal sustainability, i.e. an ability to service and/or repay the existing debt (see several definitions in Balassone and Franco, 2000 and Bohn, 1998), receives a lot of attention. However, the debate on fiscal sustainability and debt repayment capacity mostly deals with national public finances, with very little attention being given to local government units (see e.g. recent studies by Afonso and Jalles, 2016; Aldama and Creel, 2018; Collard et al., 2015; Guillard and Kempf, 2017; Uryszek, 2016).

The crisis which broke out in 2008 strongly affected sub-national finances in several OECD countries. The transfers to local governments were reduced and, at the same time, the spending policies were maintained, with the budgetary deficits financed with external repayable resources (Vammalle and Hulbert, 2013). The LGUs average debt/GDP ratio grew significantly, from less than 5% in 2007 to 7.5% in 2015 in the European Union countries. Such a scenario also occurred in Poland, where the debt/GDP ratio almost doubled from 2.2% to 4.0% in that period.

The growing indebtedness of local government units in Poland, being a consequence of budget deficits, is usually associated with high investment activity of local government authorities and is caused by the need to accelerate such expenditure rather than by the difficulties related to sustainable budget balancing (Malinowska and Misiąg, 2002). It is often an impulse for local economic development. In a situation of permanent pressure on the amount of own revenue of local governments and limited, although gradually increasing, financial independence of boroughs (Brzozowska and Kogut-Jaworska, 2016) and the participation of tax authorities in the tax policies of boroughs (Filipiak, 2015), “debt becomes a specific, forced alternative for this category of revenues” (Poniatowicz, 2014), or even the only solution allowing regional policies to be implemented. External financing, based on repayable funds, is at the same time an important element of long-term planning for LGUs, one that requires the attention of local government authorities to both the design of the future free funds of LGUs and the risks generated by the existing debt.

As a consequence of the crisis which created substantial fiscal gaps, the amount of the debt of the local government sub-sector grew significantly. Considerable and lasting fiscal tightening is needed in the majority of OECD countries in order to bring down the local government debt (Sutherland et al., 2012). Otherwise, the provision of public goods and continuation of several development policies by LGUs may be hindered (Vammalle and Hulbert, 2013). Debt reduction is also required for diminishing the systemic risk of the LG sector since a high level of indebtedness can cripple investors’ confidence and may lead to increased risk premiums on the external financing (Steger, 2013).

The amount of the debt of the local government sub-sector in Poland is shown in Table 1. In the years 2007-2016, the LGU debt in absolute terms increased by over 166% in Poland, whereas, for example, the net debt as a percentage of the total revenue increased by approx. 15 percentage points. Since 2013, however, there has been a systematic improvement of the basic indicators illustrating the level of indebtedness of LGUs in Poland. In terms of the relative size of debt at the end of 2016, it had returned to the levels observed at the beginning of 2010. Moreover, the size of operating surpluses suggests that their levels were the highest since the beginning of the global financial crisis at the end of 2008. Only the total nominal LGU debt (PLN 69 billion) remained at a high level, close to the levels observed at the end of 2013.

The financial situation of Polish LGUs has improved due to the impact of several basic factors. On the one hand, it is the result of a stable growth of real GDP in 2014-2016 (annual average +3.3%), which allowed for a nominal increase in total LGU revenue at an average annual rate of +5%. In addition, some significant categories of LGU expenditure have decreased. In particular, historically low interest rates have caused the ratio of interest costs to total revenue to fall to 0.9% – the lowest since 2007. However, low interest rates, temporarily beneficial for LGUs, also constitute a significant risk for LGUs. As Dylewski (2014) shows, interest rate risk is one of the two basic risks taken into account by LGUs in the management of their debt instruments (74.2% of replies – ‘often’ or ‘always’).¹ Simulations of changes in future interest rates (Kluza 2016b) indicate that an increase in interest rates to the 2013 level, combined with a small increase in current costs, may lead to financial difficulties in over 300 LGUs.

In addition, lower LGU borrowing needs are the result of a decrease in EU-funded investments implemented by LGUs. In total, capital expenditure and current expenditure on projects from the European Union decreased from PLN 23.3 billion in 2014 to PLN 19.0 billion in 2015, and to only PLN 4.5 billion in 2016. The initial phase of the cycle influenced such investment in relation to the new EU Financial Framework 2014-2020, although it cannot be ruled out that the total investment from EU funds may be lower in the entire Financial Framework than originally planned. The improvement in the central government budget is also important for the reduction of the LGU debt. This was alleviated by the priority of the principle of balancing public finances over the principle of the adequacy of LGU revenues for several years after 2009 (Lubińska, 2017). As a result of these phenomena, as well as several minor other factors, the operational surpluses of LGUs have clearly improved and their nominal debt has decreased (see Table 1).

The improvement of the financial condition of the LGU sector at the end of 2016, illustrated in Table 1, indicates that this sector had potentially returned to a financial condition similar to that observed in 2009. The purpose of this study is to verify, on the basis of indicators of the debt repayment period, whether we are indeed dealing with such a phenomenon. This study verifies not only the

¹ This issue is ranked second after the risk of losing financial liquidity (76.6% of replies). The risk of overinvestment, ranked next, has only 61.1% of replies.

Table 1. Selected financial figures illustrating local government debt in 2007-2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
total LGU debt (PLN million)	25 876	28 775	40 294	55 094	65 756	67 835	69 159	72 110	71 635	69 020
debt as % of total revenue	19.7%	20.2%	26.0%	33.8%	38.4%	38.2%	37.7%	37.1%	36.0%	32.3%
net debt as % of total revenue*	~7%	7.7%	15.4%	24.7%	29.3%	29.6%	30.3%	29.8%	27.8%	22.3%
operating surplus (PLN million)	17 725	17 729	11 963	9 287	10 994	11 627	14 337	16 318	18 228	20 526
as % of total revenue	13.5%	12.4%	7.7%	5.7%	6.4%	6.6%	7.8%	8.4%	9.2%	9.6%
operating surplus before interest costs (PLN million)	18 788	19 118	13 439	11 227	13 785	15 177	17 224	18 806	20 313	22 483
as % of total revenue	14.3%	13.4%	8.7%	6.9%	8.0%	8.6%	9.4%	9.7%	10.2%	10.5%
interest costs / total revenue	0.81%	0.97%	0.95%	1.19%	1.63%	2.00%	1.57%	1.28%	1.05%	0.92%
LGU capital expenditure (PLN million)	27 068	31 924	43 129	44 252	42 434	35 617	35 007	41 350	38 576	25 831

Source: own analysis based on the Ministry of Finance data.

* the debt net of cash, deposits and securities (reported in positions N1.2 and N3.2 in the Rb-N statements)

condition of the LGU sector in general, but also analyses the differentiation of the repayment period between individual categories of LGUs and diversity within these categories.

2. Data and research method

In this study, all LGUs in Poland are analysed (2,808 units at the end of 2016), assigned to individual categories of local government units according to their status at the end of 2016, i.e. 1,559 rural boroughs, 616 urban-rural boroughs, 237 municipalities, 314 counties, 66 towns with county rights and 16 provinces (marshal offices). In the 10 years comprised by the study, there were several changes related to the change of categories of individual LGUs, usually to an urban-rural borough from a rural or urban borough. Most significant was the change of the category of the Wałbrzych urban borough into a town with the rights of the Wałbrzych county. In addition, the rural borough of Jaśliska was established in the analysed period, and the rural borough of Zielona Góra was incorporated into the town with the rights of the Zielona Góra county. To ensure comparability of data between these categories, in individual years LGUs were assigned the category held at the end of 2016.

The data used in the analysis come from the Ministry of Finance, from the BeSTi@ system. As debt, the sum of the LGU liabilities from the Rb-Z statements was adopted. They do not include liabilities of LGUs from alternative financial instruments such as real estate leasing or leaseback. A broad description of these instruments, together with the list of LGUs using them, is presented in (Kluza, 2016a) as well as in (Jastrzębska, 2016). They currently constitute approx. 2% of total LGU commitments (Jastrzębska, 2017). This is a small amount, but one should bear in mind that these instruments are mainly used by LGUs that are in a weaker financial condition, therefore the sub-divisions of the longest debt repayment period in the analysis below, in Part 3 of the study, may be underestimated by a dozen or so entities.

The analyses presented in this study are not a comprehensive assessment of the financial condition of local government units since they only focus on one aspect – the hypothetical repayment period of the debt already held by local government units. However, a comprehensive discussion of this subject is included, among others, in Poniatowicz et al. (2010). Detailed approaches to conducting a multi-dimensional ratio analysis of LGUs are presented, among others, by Banaszewska (2016) and Czudec and Kata (2012). Proposals for various measures determining the financial attractiveness of LGUs are widely discussed in Dylewski (2009). Proposals for measures concerning the assessment of LGUs' financial liquidity are presented, among others, in Dylewski and Filipiak (2012), and indicators showing the ability to service debt based on operating surplus or net debt in Kluza (2017).

To assess the debt repayment period, the equivalent of operating cash flow in local governments is calculated, which is potentially available for repayment of debt. Here, one cannot use the measure from the right-hand side of the equation

from Art. 243 of the Act on Public Finances - UFP (2009), which is supplemented by income from the sale of assets. Therefore, the surplus is calculated directly as the difference between current revenue and current expenditure (after taking into account the repayment of interest). This amount is combined with the debt held by LGUs at the end of the period to obtain an estimate of the number of years needed to pay the total debt (just the principal, without interest). The simulation assumes that LGUs will not contract new loans (apart from the coverage of the temporary LGU deficit occurring during the year, in accordance with Article 89 UFP (2009), i.e. the hypothetical repayment horizon of the debt already held is analysed. At the same time, it was assumed that the LGU would pay 50% of the surplus so defined to repay the debt, while the other half would be allocated to its further investment activities, including the replacement of existing assets.

Simulations have been carried out for two basic variants – the first one examines the debt repayment horizon based on the above-defined surplus for the current year, and the second one is based on the average surplus from three years (for the current year and two previous years). The analysis is a continuation of the research presented in Kluza (2013) and then developed in Golan (2016), where, among others, the impact on LGUs of the individual debt ratio under Art. 243 UFP (2009) was analysed. As part of the simulation, debt repayment ratios are calculated for all individual LGUs and Poland in total for individual years from the period 2007-2016, which altogether gives 28,905 observations for the analysis of the annual ratios and 22,477 observations for the three-year indicator.

3. Simulation results of debt repayment period by LGUs

The simulations of the debt repayment period indicate large changes in the financial condition of LGUs as measured by this parameter in the years 2007-2016. Until the end of 2008, debt held by LGUs was short- or medium-term – the repayment period calculated in accordance with the approach presented in Part 2 of the study fluctuated at around three years. Afterwards, it began to grow dynamically to reach a level of approx. 12 years in 2010-2012, signalling the weakest financial condition of LGUs in that period (see also e.g. Zawora, 2015). After 2012, the indicator values started to improve significantly, and at the end of 2016 it had fallen to 6.7 years. The analysis of repayment periods for Poland corroborates the hypothesis formulated based on Table 1, that at the end of 2016 the LGU sector returned to a financial condition similar to that observed at the end of 2009 (see Table 2).

Similar results were obtained in the case of the simulation of LGUs' debt repayment periods based on their three-year average operating surplus. LGUs had the longest debt repayment period (12.8 years) at the end of 2012. At the end of 2016, the LGU debt repayment period had fallen to 7.5 years, a situation similar to that around mid-2010 (see Table 3).

Table 2. Repayment period of the existing gross debt; simulation based on a one-year surplus

<i>in the years</i>	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Borough	2.7	2.7	4.7	9.3	9.5	8.3	7.0	6.5	5.8	4.6
Urban borough	3.1	3.2	8.6	16.8	12.9	12.3	9.9	8.0	7.1	5.8
Urban-rural borough	3.3	3.2	5.8	12.1	11.2	9.8	8.2	7.6	6.6	5.3
Rural borough	2.2	2.0	3.0	6.1	7.3	6.2	5.3	5.2	4.8	3.7
Town with county rights	3.4	4.5	12.7	19.0	20.3	23.2	14.9	12.6	11.4	10.6
County	5.4	5.3	8.8	13.9	9.7	10.9	9.4	7.9	7.2	5.4
Province	1.5	1.6	3.2	6.5	7.3	7.1	8.3	9.3	7.0	7.1
Poland in total	2.9	3.2	6.7	11.9	12.0	11.7	9.6	8.8	7.9	6.7

Source: own analysis based on the Ministry of Finance data; data for all LGU categories.

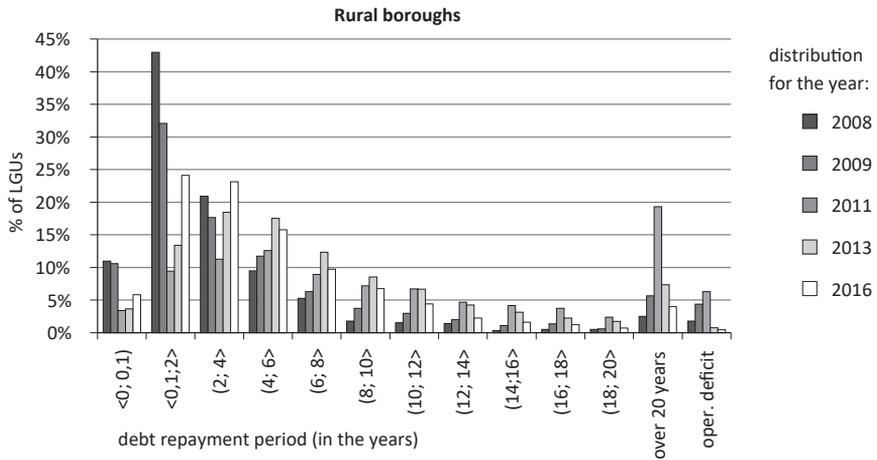
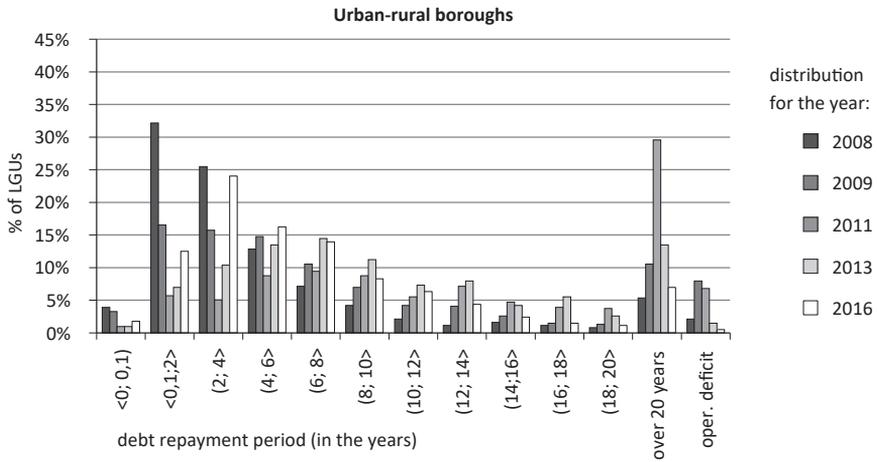
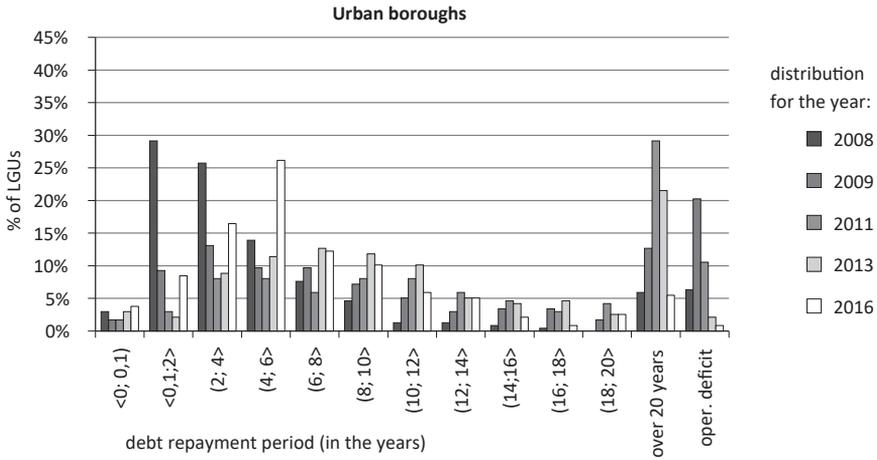
Table 3. Repayment period of the existing gross debt; simulation based on the average surplus from the last three years

<i>in the years</i>	2009	2010	2011	2012	2013	2014	2015	2016
Borough	4.1	6.9	9.5	9.5	8.1	7.3	6.3	5.3
Urban borough	5.4	9.8	14.9	14.3	11.5	9.8	8.0	6.5
Urban-rural borough	5.0	8.4	11.6	11.6	9.6	8.6	7.4	6.1
Rural borough	2.9	5.1	6.8	6.9	6.2	5.7	5.0	4.2
Town with county rights	7.3	12.6	20.5	22.8	19.5	16.4	13.1	11.5
County	7.9	11.8	12.6	11.4	9.8	9.3	8.0	6.5
Province	2.4	4.3	7.0	8.1	8.2	9.0	8.3	7.4
Poland in total	5.1	8.5	12.2	12.8	11.2	10.2	8.8	7.5

Source: own analysis based on Ministry of Finance data; data for all LGU categories.

To verify whether LGUs are in a similar situation in terms of the repayment period of their debt as in 2009 the goodness of fit tests of the distribution both between schedules for particular years and the differences between particular categories within a given year are required. Chi-square tests were used for the analysis, calculated for the variant with a one-year operating surplus. Their results are presented in Appendix 1. They clearly indicate that the distribution of debt repayment periods for each category of LGUs is statistically significantly different in 2016 from the distribution in 2009 (in the tests, provinces were left out due to the insufficient number of units). In addition, distributions for individual categories of LGUs within a given year are statistically significantly different.

In 2009, the distribution of debt repayment periods was clearly more polarised – a relatively large number of LGUs had short repayment periods and, at the same time, a relatively large number also had the longest repayment periods. In addition, approximately 8% of LGUs had an operating deficit in 2009. In 2016, this situation levelled out – the number of units with an average repayment period increased at the expense of a decrease in the number of extreme observations (see



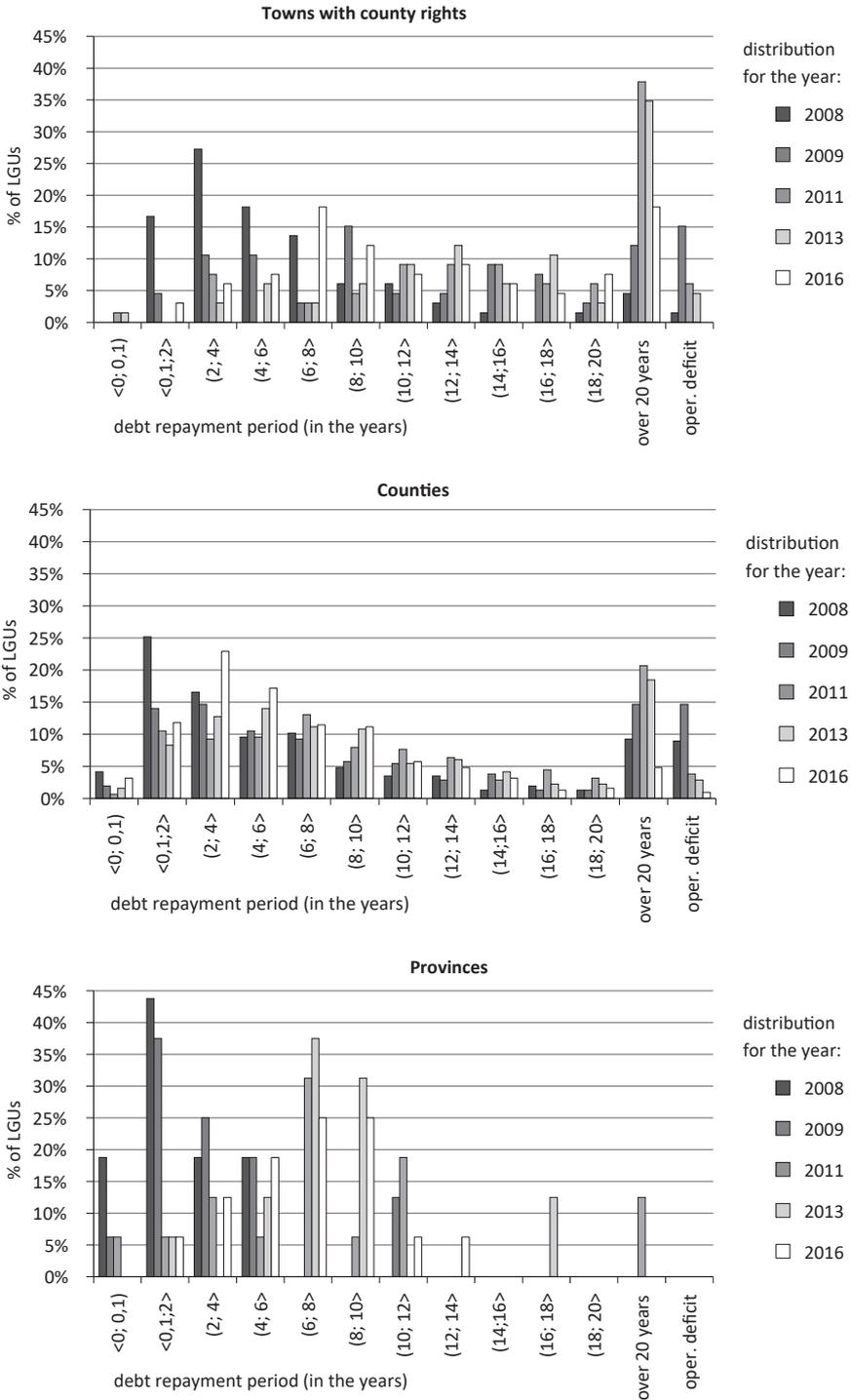


Figure 1. Comparison of distributions of debt repayment periods for individual LGU categories for selected years

Source: own analysis based on Ministry of Finance data; data for all LGU categories.

Chart 1). At the same time, the percentage of LGUs that did not have an operating surplus dropped to 0.5%, which was a consequence of the entry into force of Art. 242 UFP (2009) at the beginning of 2011, which provided that LGUs need to have a surplus (within the meaning of Article 243 UFP, 2009), also including free funds held by LGUs. The differences described here are corroborated by the coefficient of variation for the analysed distributions – for LGUs as a whole it amounted to 35.6 in 2009, while in 2016 it was significantly lower, at 7.2.

At the same time, it is worth noting that in 2016 some LGUs had completely paid off their debt – from the previous debt of several million zlotys. These were the boroughs of Osiecznica, Prażmów, Szydłów, Złotów, and the borough of Wysokie Mazowieckie. At the same time, approximately 100 LGUs had operated without debt for several years. In 70% of cases, these were rural boroughs. In 2009, there were about 200 such entities, of which over 80% were rural boroughs.

When analysing the distributions of repayment periods in Figure 1, one should pay particular attention to two categories of LGUs where opposing processes took place. These are counties and towns with county rights. In the case of counties, we deal with the largest improvement in the debt repayment period – a decrease from 8.8 years in 2009 to 5.4 years in 2016. This process was partly imposed by Art. 243 UFP (2009), which proved to be the most restrictive for counties (see Kluka and Kluza, 2012), and in part was related to the gradual transformation of health entities owned by counties into non-public units. Despite the generally good financial condition of that category – as a result of its average low debt (23.2% of total revenue at the end of 2016) – it remains the category most internally diversified (the coefficient of variation for counties for debt repayment periods in 2009 was 22.0 and in 2016, 17.2). Those counties which are, or which were in the not so distant past, the founding bodies for health entities, are clearly in a worse situation.

The situation in towns with county rights differs somewhat. This subcategory consists of only 66 entities, but it represents 33% of Poland's population and 35% of LG sector revenues, and therefore it is of huge importance also from the entire public sector perspective. In relation to revenue, their debt increased from 25.9% at the end of 2008 to 44.1% at the end of 2016. As the data in Table 2 and Table 3 show, the debt repayment period increased even more. In the case of simulations for the surplus from the current year, it increased from 4.5 years in 2008 to 10.6 years in 2016. As a result, towns with county rights are on average the heaviest indebted LGUs, with debt repayment periods twice as long as in the case of other boroughs or counties. The described situation is not changing, even if the formula of the operating surplus used to repay the debt includes income from the sale of assets, similarly to Art. 243 UFP (2009). Their scale in the case of towns with county status, owning potentially the largest assets, is not large – for example, in 2016 it amounted to PLN 1.66 billion, which accounted for 5% of the debt of these units.

Figure 1 for towns with county rights also highlights the great diversity of the financial condition of these units, which is also confirmed by the coefficients of variation. In 2009, this category had a coefficient of variation for the debt

repayment ratio at 2.4. In 2016, this increased to 7.3. This reflects the growing polarisation of the financial situation of these towns.

At the end of 2016, towns with county rights from Upper Silesia were by far in the best position – they occupied the first six places in the ranking of the ability to repay their debt as quickly as possible for this particular category of LGUs. There are as many as eight towns from Upper Silesia in the top ten. On the other hand, one in three towns with county status in Poland needs over 15 years to repay its current debt according to the simulation model adopted. In the remaining categories of LGUs, the percentage of such entities amounts to 8.6% on average, which is four times lower. In practice, this means that a significant percentage of the largest Polish cities may have difficulties in obtaining adequate financing for upcoming investments, both under the Financial Framework 2014-2020 and under their own programmes.²

4. Summary and further research topics

The above analysis demonstrates that the fiscal sustainability of LGUs in Poland, as a whole sector, significantly improved at the end of 2016 compared to 2012, when it was the weakest. This is the result of, among others, a decrease in LGU investments, particularly investments co-financed by the EU, improvement in the macroeconomic environment, low interest rates and financial innovations (hiding part of the debt). From the perspective of debt ratios and the ability of LGUs to repay their debt, at the end of 2016 LGUs returned to the situation observable at the turn of 2009-2010. However, at the end of 2016, several LGUs were characterised by inability to contract new debt (from the perspective of repayment capacity). This problem concerns practically one in eight LGUs.

In this study, considerable variations in the financial condition between individual categories of LGUs were confirmed. The study found that there is no hypothetical, average LGU from which one could draw conclusions about the condition of the LGU sector as a whole in Poland, and the average values can be very misleading in this case. Based on the above analysis, a completely different distribution of the debt repayment period within the described LGU categories was also found. In 2008, there was more polarisation, while in 2016 the distribution was focused around medium and safe levels of debt. The largest improvement in the financial condition of LGUs occurred in counties, while the most worrying situation is in towns with county rights (in 33% of these entities the repayment period is estimated at above 15 years). The relatively unfavourable condition of towns with county rights indicates the need to revise statutory LGU debt limits under Art. 243 UFP (2009). In their present form, they may cause the LGU debt to reach dangerous levels – with a repayment horizon of several dozen years.

The study does not exhaust the analysed issues, but it can undoubtedly contribute to further discussion on this subject, which still captures the interest of both theoreticians and practitioners. Similarly, the above analysis does not provide

² See also (Szołno-Koguc 2015).

answers to several acute questions, in particular, about the sensitivity of LGUs to the risk of economic slowdown from the point of view of debt and its servicing. For a complete verification of the financial condition of LGUs, it will also be necessary to carry out alternative analyses based on the net debt of LGUs, an issue that will be the subject of further research by the authors.

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Appendix 1. Results of the goodness of fit tests (χ^2); scenario – repayment period of the existing gross debt based on a one-year surplus

	Test Statistics χ^2	Degrees of freedom	Critical value (p)
Comparison of distributions for a specific LGU category between 2009 and 2016:			
Town with county rights	23.20	12	0.0261
Urban borough	77.92	12	0.0000
Urban-rural borough	68.70	12	0.0000
Rural borough	145.83	12	0.0000
County	73.92	12	0.0000
Comparison of distributions for all LGU categories in a given year:			
2009	420.12	48	0.0000
2016	237.01	48	0.0000

Source: own calculations

Note: The tests for provinces were not calculated due to too few observations for this variable.