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IMPACT OF ECONOMIC CRISES ON FINANCIAL STABILITY AND LIQUIDITY OF SLOVAK LOCAL SELF-GOVERNMENTS

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Abstract

Evaluating the effectiveness of local self-governments is a very complex process due to the fact that local self-governments are not primarily supposed to make a profit, but to provide services to residents that will contribute to improving their quality of life. To improve the performance of local self-governments, it is important to consciously and gradually introduce modern management methods successfully applied in the private sector to increase the efficiency and quality of the services provided. One of these methods is financial analysis. Therefore, the article focuses on the assessment of the impact of selected debt ratio indicators on the overall liquidity of the Slovak local self-governments in the period of 2010-2023. At the same time, the analysis focused on the assessment of the impact of the financial crisis and the Covid-19 pandemic period on the overall liquidity of local self-governments.

The results of the analyses proved that the selected indicators showed a fluctuating trend, with the most significant impact on the overall liquidity of local self-governments being the level of indebtedness and the return on assets of local self-governments. Overall liquidity increased in the Covid-19 pandemic period compared to the period when local self-governments were affected by the economic crisis.

Keywords: debt ratio indicators, total liquidity, local self-government, financial analysis.

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1. Introduction

The financial stability of local self-governments indicates their ability to maintain a balanced budget, to manage their financial resources efficiently, and to ensure that their financial health is sustainable in the long term. However, effective local self-governance is a very complex process because a local self-government is not primarily about making a profit, but about providing services to residents that contribute to improving their quality of life. This is also confirmed by Hábová (2001) who states that an efficient local self-government is one that correctly estimates the demand for public goods and can provide them in sufficient quantity, but not in excess, at least at cost. In such a case, efficiency can be assessed on the basis of selected financial analysis indicators.

However, according to Balážová and Papcunová (2008) and Tej (2010) several factors influence the ultimate effectiveness of individual activities provided by a local self-government. One of the most important factors is the economic development of the country; although local self-governments have undergone a significant change in funding through the implementation of fiscal decentralization, their dependence on state funding remains. This aspect has a significant impact on their financial stability, particularly in the times of various crises. Although the crises themselves are difficult to predict, ultimately the subsequent solutions applied by countries at both national and local levels present both a challenge and an opportunity to understand the process and apply the knowledge for the subsequent crisis periods. Recently, a number of crises have had a significant impact on local self-government financing — the economic crisis, Covid-19, the energy crisis and the war conflict in Ukraine.

There is a significant lack of analysis of the impact of crises on the financial stability of local authorities, which could raise awareness of how local authorities should behave in times of crisis. Consequently, this shortage of information leads to the delayed and inappropriate responses by local authorities to emerging crises. Therefore, the article focuses on the assessment of the impact of selected debt ratio indicators on the overall liquidity of the Slovak local self-governments in the period of 2010–2023. At the same time, the analysis focused on the assessment of the impact of the financial crisis and the Covid-19 pandemic period on the overall liquidity of local self-governments.

In terms of the methodology of the paper, we will focus on the application of causal analysis. Its use will help us to better understand the causes of changes in the variables under study. Causal analysis focuses on identifying and understanding causal relationships

between different variables; it aims to determine whether there is a causal relationship between variables and, if so, how one variable affects the other. Thus, this article could help local self-government leaders to understand how the economic crisis has affected the financial stability of the local self-governments in the context of their sustainability. By analyzing the selected indicators and improving awareness of the impact of the economic crisis on the financial stability of the local self-governments, stakeholders, not only at the local but also at the national level, can find more effective tools to deal with emerging crises at the local self-government level. Ultimately, the obtained results can result in possible changes in local self-government financing. Such an analysis contributes to a broader perception of financial analysis as an integral tool for the financial stability of the local self-governments at the level of academia, but especially for local and national government leaders.

The paper is organized into four main parts. The first part presents the theoretical framework in the field of performance management at the local government level. The second part deals with the methodological elements, focusing on the description of the sample as well as the methods used. The next section describes the results of the analysis, and also the theoretical and practical implications that emerged from the analysis. The paper concludes with a summary of the most important findings and indicates the possible directions for further research in this area. A previous version of the paper (Hudáková *et al*., 2024) was presented during a conference but the research has not been published elsewhere.

2. Literature review

The stability of local self-governments in the individual areas they provide is, according to Marks-Bielska *et al.* (2020), the ability to achieve institutional efficiency in the context of sustainable development. One of the tools that can contribute to the stability and subsequent development of local self-governments is performance management.

Performance management means the use of and enabling environment for the development of management tools that help to periodically review the results and effectiveness of the public policies and service delivery with a view to improving them. Governments develop performance standards to measure the performance of public policies and services (Profiroiu, Ţapardel and Mihăescu, 2013); one of the performance metrics is the measurement of performance through financial indicators (Bicekova, Mihokova and Andrejovska, 2015). Basically, the financial performance of local self-governments refers to the ability of local self-governments to find sources of revenue to carry out government affairs, community services and development, so that there is no need to depend on the costs transferred by the central government and the local self-government (Putri and Munandar, 2021). Performance measurement is used to see the ability of local self-governments to manage finances. Financial performance can be affected by capital expenditures, because the more capital expenditures, the higher the economic productivity or performance of local self-governments (Delang and Sitorus, 2024). Also, according to Mokodompit, Pangemanan and Elim (2014) and Gregánová *et al*. (2015), the measurement of financial performance is

necessary to assess performance, measure the potential of economic resources, and ensure that the government has established financial management in accordance with laws and regulations.

However, the financial analysis of public sector organizations has its own specifications. Unlike for-profit companies, the main objective of these organizations is to provide the public goods to their citizens and to promote public interest. Despite the absence of a primarily profit-making objective, non-profit organizations (municipalities) can make a profit. The utilization of financial analysis can be a weakness in the management of an organization and the results of financial analysis can be compared, especially when comparing homogeneous entities, which is respected in this case (Vavrek et *al*., 2021; Krajcirova, Vanova and Orszaghova, 2016).

Thus, the efficiency of the financial management of local self-governments becomes one of the important attributes. A local self-government finance system should meet a number of principles to function effectively. These principles include transparency, stability, efficiency of the financial system, its administrative simplicity, and a degree of financial autonomy and accountability. Simply put, the financial autonomy of local self-governments depends primarily on the ability of local self-governments to raise revenue for their budgets (Kološta, Flaška and Bolcárová, 2014). Knowing the financial situation of a local self-government is important because it is the main provider of services directly to the public. However, a local authority can only provide these services if it is in good financial shape. A sound financial position ensures the sustainability of local self-government in delivering services of adequate quality (Ritonga, 2014). Gauthier (2007), in his study of local self-government financial statements in the U.S., recommends that an evaluation of a local self-government's financial health can be conducted from three perspectives: (1) short-term financing – is the local self-government able to meet its short-term financial obligations in a timely manner? (2) financial position – the difference between total assets and total liabilities, i.e. net assets; and (3) economic condition – focusing on the likelihood that the current financial position will improve or deteriorate in the future.

Responsible fiscal behavior of local self-governments is important above all in unpredictable and critical situations. One such situation was the economic crisis, when the volume of financial resources, which were directed in the form of transfers to the level of local governments, decreased. Another significant crisis was the Covid-19 pandemic, which created a perfect storm for local fiscal decision-making. The difficult decisions had to be made about deferring or abolishing taxes and fees (Dvořák *et al*., 2020). Also, in other countries, in connection with the Covid-19 pandemic, fiscal rules for the local self-governments were changed — e.g. in Portugal, the rules for the budget balance for the current budget were changed, within the framework of the debt rule it was possible to exceed the legislatively established debt limit in the event of the adoption of anti-pandemic measures (European Committee of the Regions, 2021); in Poland, additional pandemic exemptions from the debt limit were also allowed and the annual debt limit was increased to 80% of income (Malinowska-Misiąg, 2023).

Thus, the COVID-19 pandemic has further heightened public awareness of the financial management of local self-governments (Tassonyi, 2022). However, traditional performance measurement systems have focused on the development of indicators that are largely concerned with economy (inputs) and efficiency (costs) due to the limited ability to measure effectiveness or outcomes (Kloot and Martin, 2000). This is also confirmed by Turley, Robbins and McNena (2015) who note that the use of financial indicators at the level of local self-governments allows local authorities to better understand their financial performance. The indicators make it easier to compare the relative performance of one municipality with other municipalities, thus enabling citizens to contribute to political discussions about the development of the territory through their political representatives. According to Guthrie and English (1997) in the public sector, given that targets are often stated in non-financial terms, non-financial performance indicators are needed because conventional financial reporting does not fully capture performance. When measuring performance in the public sector, according to Verbeeten (2008) it is useful to distinguish between quantitative and qualitative performance. Quantitative performance refers to the quantitative aspects of performance, such as the use of resources (budget utilization or economy), the number of outputs produced and efficiency. Qualitative performance refers to 'operational quality' (e.g. accuracy, see Carter, 2000), but also to 'strategic capacity' (e.g. innovation and long-term efficiency — see Newberry and Pallot, 2004; Kaplan, 2001; Kloot and Martin, 2000).

According to Tudose (2013), the financial performance of local authorities is directly affected by the quality of decision-making specific to local self-government financial management. Therefore, it is important to assess it using a coherent and consistent set of indicators, thus providing a basis for comparing the development of the different local authorities, located at the same administrative level, at different levels, in the same country or in the different countries, under the same conditions. Thus, according to Delang and Sitorus (2024), local self-governments need to do more to examine and see the resources, they must improve their financial performance, so that they are not reliant on a single revenues stream but can optimize management. The methods used in financial analysis aim to demonstrate measurably what the costs and benefits of different decision options are. It is based on ratio indicators that give a relatively quick picture of the underlying financial characteristics. However, local self-government leaders struggle with how to use the results of performance measures to make management decisions (Rivenbark and Roenigk, 2006).

3. Methodology

The article focuses on the assessment of the impact of selected debt ratio indicators on the overall liquidity of the Slovak local self-governments in the period of 2010–2023. At the same time, the analysis focused on the assessment of the impact of the financial crisis and the Covid-19 pandemic period on the overall liquidity of local self-governments. The sample consisted of 2,890 local self-governments and data from the DataCentrum — the budgetary organization of the Ministry of Finance of the Slovak Republic.

We used the following indicators for the analysis:

- indebtedness ratio = $\frac{liabilities\ together}{equity}$ (1)
- total indebtedness = $\frac{liabilities\ together}{asset}$ (2)
- return of investment = $\frac{economic\ result}{asset}$ (3)
- return on equity = $\frac{economic\ result}{equity}$ (4)
- total liquidity = $\frac{current\ asset}{short-term\ liabilities}$ (5)

From the viewpoint of the methodology, the paper will focus on the use of causal analysis; its application will help us better understand the causes of changes in the investigated variables. Causal analysis focuses on identifying and understanding the causal relationships between different variables, and its purpose is to determine whether there is a causal relationship between the variables and, if so, in what way one variable affects the other. For the purposes of performing a causal analysis, we started from the pyramid model of ratio indicators (see Figure 1), which describes the need for a basic assessment of the financial situation in self-government (Mihaliková, 2011).

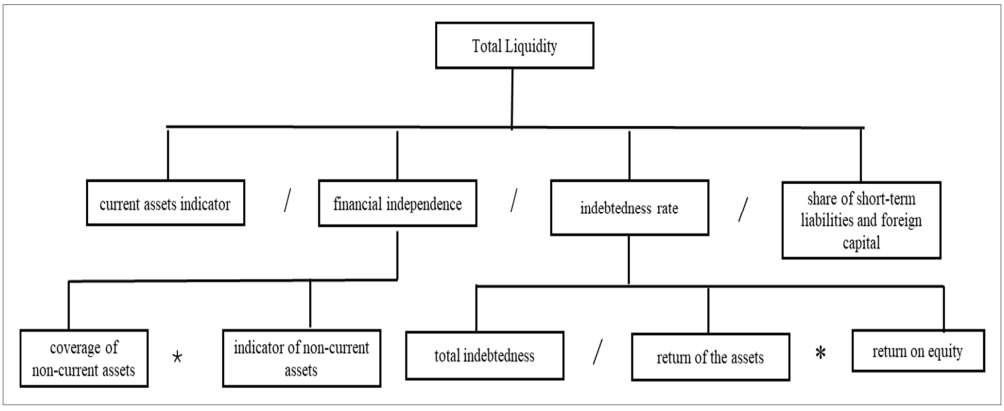

Figure 1: Model of financial indicators for local self-government

Source: Mihaliková (2011), own processing

The model includes indicators from all the main areas of the financial situation (liquidity, activity, indebtedness, profitability). In line with the objective of the paper, we have focused on examining the impact of a change in the analytical indicator leverage ratio on the top synthetic indicator total liquidity. From a second-order decomposition, we examined the impact of the analytical indicators of total indebtedness and return on total capital on both the synthetic indicator leverage ratio and the top-level indicator total liquidity.

Several methods can be used to calculate the effects of changes in the analytical indicator on the change in the synthetic indicator. The choice of the method needs to solve the problem of quantifying the impact of a change in the analytical model, in particular, from the links that exist between the indicators whose deviation we are analyzing and the indicators that we assume to have caused the deviation. In our case, we evaluate the relationship between indicators between which there is a multiplicative link (multiplication or division). In this case, the logarithmic method, the method of successive changes, the method of chain addition, the functional method, and the integral method can be used (Gurčík, 2018; Zalai, 2016). For our needs, the logarithmic method is the most suitable since it is the simplest among the above-mentioned methods and at the same time it achieves accurate results. The condition for its use is that the indices of the examined indicators reach positive numbers; this condition is met in our account in any case. As already mentioned, the method is based on the indices of change of the individual factors. We have the following relationships:

$$X_0 = a_0 \cdot b_0 \tag{1}$$

$$X_1 = a_1 \cdot b_1 \tag{2}$$

$$\Delta X_0 = X_1 - X_0 \tag{3}$$

Where: X synthetic indicator of higher order decomposition
ΔX year-on-year change in the synthetic indicator *X*
a_1 the value of analytical indicator *a* in the current period
b_1 the value of analytical indicator *b* in the current period
a_0 the value of analytical indicator *a* in the base period
b_0 the value of analytical indicator *b* in the base period

Equation (3) can also be written as:

$$X_1 - X_0 = X_0 . \frac{X_1}{X_0} - X_0 \tag{4}$$

Equation (4) can be modified for our purposes as follows:

$$X_1 - X_0 = X_0 . \left(\frac{a_1}{a_0} . \frac{b_1}{b_0}\right) - X_0 \tag{5}$$

$$X_1 - X_0 = X_0 . \left(\frac{a_1}{a_0} . \frac{b_1}{b_0} - 1\right) \tag{6}$$

From equation (6), it is clear that the indices of the different factors and the absolute difference of the synthetic indicator have an equivalent effect; if any one of them increases z times and the others do not change, we get the same absolute difference. The exponent of the common base, or the logarithms of the indices, determines the distribution of the change in the synthetic index. Since the relations of the exponents do not change as the bases change, there is no need to be concerned with the determination of the common

base. We can derive the partial differences from the logarithms at any base (the natural logarithm, or decadic logarithm, is most commonly used) (Zalai, 2016). Based on the above, we can write equation (6) via the decadic logarithm as follows:

$$X_1 - X_0 = X_0\left(10^{log\,log\frac{a_1}{a_0}}.10^{log\,log\frac{b_1}{b_0}} - 1\right) \tag{7}$$

Thus, the fraction of change attributable to each factor is equal to the fraction of the exponent for each factor over the sum of the exponents for all factors (Zalai, 2016). Thus, the effect of a change in the analytical variables on the change in the synthetic variable can be written as follows:

$$X_a = \Delta X.\frac{log\,log\,\frac{a_1}{a_0}}{log\,log\,\frac{a_1}{a_0} + log\,log\,\frac{b_1}{b_0}} = \Delta X.\frac{log\,log\,\frac{a_1}{a_0}}{log\,log\,\frac{a_1}{a_0}.\frac{b_1}{b_0}} =$$

$$= \Delta X.\frac{log\,log\,\frac{a_1}{a_0}}{log\,log\,\frac{X_1}{X_0}} = \Delta X.\frac{log\,log\,I_a}{log\,log\,I_x} \tag{8}$$

$$X_b = \Delta X.\frac{log\,log\,\frac{b_1}{b_0}}{log\,log\,\frac{a_1}{a_0} + log\,log\,\frac{b_1}{b_0}} = \Delta X.\frac{log\,log\,\frac{b_1}{b_0}}{log\,log\,\frac{a_1}{a_0}.\frac{b_1}{b_0}} =$$

$$= \Delta X.\frac{log\,log\,\frac{b_1}{b_0}}{log\,log\,\frac{X_1}{X_0}} = \Delta X.\frac{log\,log\,I_b}{log\,log\,I_x} \tag{9}$$

Where: I_a the index of the analytical indicator *a*
I_b the index of the analytical indicator *b*
I_X index of the synthetic indicator *X*
X_a the impact of a change in analytical indicator *a* on synthetic indicator *X*
X_b the impact of a change in analytical indicator *b* on synthetic indicator

In our research, in addition to the case where there is a product between the analytical variables, there is also a situation where there is a proportional relationship between the analytical variables. The fractional constraint changes to a differential constraint when the logarithm is applied, which implies that in the case of an analytical variable listed in the denominator of a synthetic variable (in our case, variable *b*), a minus sign is added in the numerator of the fraction that expresses its influence.

The equation (9) would then have the following form:

$$X_b = \Delta X.\frac{-\,log\,log\,\frac{b_1}{b_0}}{log\,log\,\frac{a_1}{a_0} + log\,log\,\frac{b_1}{b_0}} = \Delta X.\frac{-\,log\,log\,\frac{b_1}{b_0}}{log\,log\,\frac{a_1}{a_0}.\frac{b_1}{b_0}} =$$

$$= \Delta X. \frac{\frac{b_1}{b_0}}{log\ log\ \frac{X_1}{X_0}} = \Delta X. \frac{-\ log\ log\ I_b}{log\ log\ I_x} \quad (10)$$

4. Results

In Slovakia, the formation of the budget as well as the budget process of a local self-government is governed by the Act No. 583/2004 on budgetary rules of a local self-government. This also has an impact on some of the analyzed indicators, especially those related to indebtedness. Based on the Act, the total debt of a local self-government represents the aggregate of liabilities resulting from the repayment of the principal of repayable financing sources, liabilities from investment supplier loans, and guarantee liabilities of the local self-government. If the total amount of debt achieves 50% of the actual current revenue of the previous financial year, the local self-government must take measures to reduce the debt.

During the period under review, the indebtedness ratio increased each year since 2019. While it reached 0.31 in 2019, it increased to 0.35 in 2013 due to a rise in both total liabilities and equity. In comparison between 2010 and 2023, the indebtedness ratio increased by 25%. At the same time, liabilities and equity increased by 50% and 20%, respectively. In 2010, when the economic crisis was at its peak, the indebtedness ratio reached 0.28, and in the Covid year 2020, it achieved 0.32. The results of the analysis show that despite facing the economic crisis, the local self-governments tried to reduce their expenses so as not to jeopardize their financial management. However, it is necessary to add that despite this, from January 1, 2012, the Slovak government reduced the coefficient of personal income tax revenue that it redistributes to the local self-government from 70.3% to 65.4%. This significantly affected the financing of local self-government in the following period.

Total indebtedness indicates how creditors are protected in the event of insolvency. The Slovak local self-governments can also become insolvent. The Act No. 583/2004 defines a situation where the total amount of overdue liabilities of a local self-government exceeds 15% of its actual current revenue of the previous financial year and where the local self-government fails to pay a liability within 60 days of its due date. In such a case, the local self-government goes into forced administration and imposes a recovery regime, which includes a schedule for the repayment of the liabilities. Total indebtedness reached 0.19 in 2010 and the same was in 2023 (see Figure 2). In 2016, total indebtedness fell to 0.16. The reduction of the total indebtedness in 2016 is again related to the change in the legislation regarding the financing of local self-governments. The personal income tax revenue ratio returned almost to the level of the fiscal decentralization period and achieved the level of 70%.

The return on investments also showed a fluctuating trend in the monitored period due to the changes in the development of personal income tax revenue. In 2010, the indicator reached the value of 0.66, which was also the highest value for the whole time. Compared to 2023, the return on investment decreased to 0.55. In the year 2020, the indicator reached 0.57.

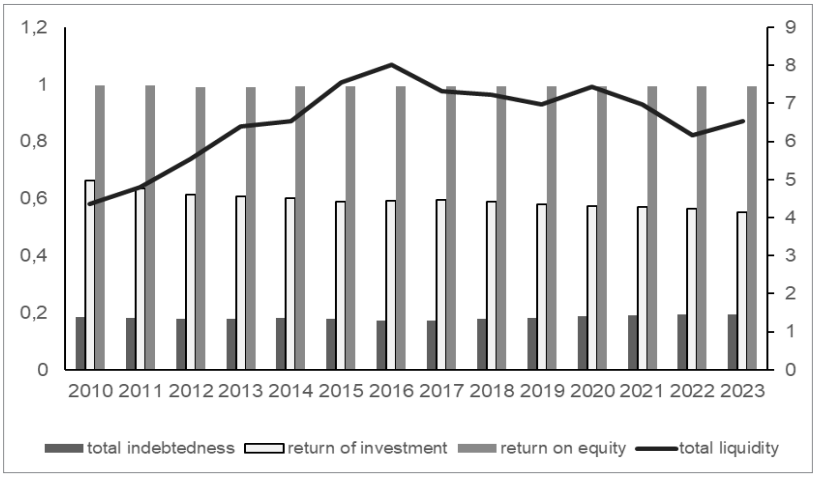

Figure 2: Development of selected financial indicators of local self-governments

Source: Datacentrum, own processing

There were no significant changes in the return on equity indicator, which did not exceed 1 in both the crisis year 2010 and the Covid year 2020. This is also confirmed by the fact that local governments, even in crisis years, prefer their own sources of financing assets compared to foreign sources, which are mainly made up of various types of liabilities.

For the total liquidity, Mihaliková (2011) notes that the higher the indicator the better, however, she also warns the long-term high values that indicate high inventories and receivables, which yields little appreciation. In the analysis, the values of the indicator ranged from 4.37 to 8.01. In the period 2010 to 2016, we observe an annual increase. The observed year-on-year increase in the total liquidity indicator shows an improving ability of the local self-governments to manage their short-term liabilities and have sufficient liquid funds. The decline in the overall liquidity of local self-governments between 2017 and 2019 indicates a deterioration in their financial situation. During this period, local self-governments increasingly implemented investment projects that were financed from EU funds under the 2014–2020 programming period, but they also contributed to these investments with their own financial resources. The increase in total liquidity in the Covid year 2020 was caused by the extraordinary pandemic situation and anti-pandemic measures, which the local self-governments also handled through increased spending from their own financial resources. The decrease in liquidity in 2021 and 2022 is a reflection of the economic recovery of the Slovak economy after the pandemic, which also affected the financial management of local self-governments and they began to implement various investment activities more intensively again. Comparing 2010 and 2023, total liquidity increased by 49% (Figure 2).

In the next part of the analysis, we focused on assessing the effects of changes in selected indicators on total liquidity. The most significant changes were observed in all indicators in 2015 and 2016 and then in 2020 (Figure 3).

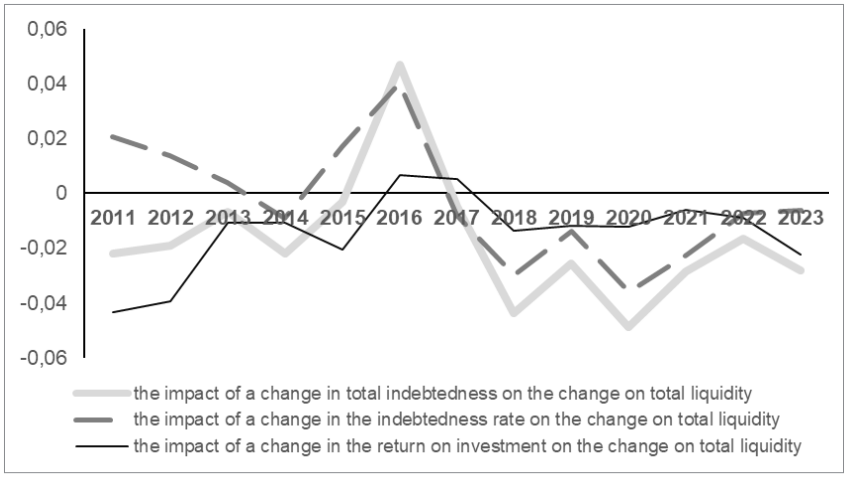

Figure 3: The impact of selected financial indicators on total liquidity

Source: Datacentrum, own processing

Table 1 presents the impact of changes in selected indicators on total liquidity in the selected years. The local self-governments in Slovakia are linked to the state budget through the personal income tax revenue. Although fiscal decentralization took place in 2005, it was not possible to reduce the financial dependence of local self-government on the state budget. In 2010, the effects of the economic crisis were also experienced in Slovakia by reducing the country's economic growth. This had an immediate impact on the financing of local self-governments, which ran into the financial difficulties because of the reduction in state revenue. These problems were so serious that the government had to supplement the financing of local self-government. Consequently, in 2012, the share of local self-governments in income tax revenue also changed from 70.3% to 65.4%. This fact was also reflected in the development of financial indicators.

Table 1: The impact of selected financial indicators on total liquidity in selected years

Indicator	2010–2012	2012–2014	2014–2015	2015–2016	2020–2023
the impact of a change in total indebtedness on the change on total liquidity	-4.373%	-3.018%	-0.325%	4.706%	-6.948%
the impact of a change in the indebtedness rate on the change on total liquidity	3.677%	-0.597%	1.709%	4.009%	-3.458%
the impact of a change in the return of investment on the change on total liquidity	-8.782%	-2.205%	-2.065%	0.687%	-3.526%

Source: Datacentrum, own processing

The increase of the indebtedness ratio between 2010 and 2012 by 0.011 resulted in a decrease in total liquidity by 0.191, respectively 4.373%. The decrease of the total indebtedness in this time by 0.006 resulted in an increase in total liquidity of 0.1606 or 3.677%. The decrease in the return on investment by 0.0495 in this time caused a decrease in total

liquidity of 0.3835, i.e., 8.782%. Another change in the state funding occurred in 2014 when the Slovak government increased the state's share of personal income tax revenue to 67% due to an improvement in economic conditions, as well as the fact that local self-governments began to save more significantly. This trend suggests that a higher debt may reduce the ability of local self-governments to cover their short-term liabilities in the future. At the same time, the increased debt may therefore mean a greater financial burden, which will have an impact on the liquidity of the local self-governments. The decrease in debt was due to decreasing liabilities of the local self-governments, which led to an improvement in their liquidity. The decrease in return on investment indicates that a lower return on investment has a negative impact on the overall liquidity of the local self-governments, as there may be a decrease in the available funds to cover liabilities. This was immediately reflected in the 2012–2014 period in a decrease in total liquidity of 0.1672, i.e., 3.018%, due to an increase in the indebtedness ratio of 0.0082.

An increase in the total indebtedness ratio by 0.001 in this time caused a decrease in total liquidity by 0.0331 (i.e., 0.597%). The decrease in the return on investment of 0.0123 in this time resulted in a decrease in total liquidity of 0.135 (i.e., 2.065%). Increasing indebtedness means that the local self-governments become more dependent on external sources of financing, which may reduce the available liquid funds to cover short-term liabilities, thereby worsening liquidity. In 2015, the Slovak government again moved to slightly increase its share of personal income tax revenue to 68%.

The 0.0009 increase in the 2014–2015 indebtedness ratio caused a decrease in total liquidity of 0.0213 (i.e., -0.325%). The decrease in the total indebtedness during this time by 0.0028 caused an increase in the total liquidity by 0.1117 (i.e., 1.709%). The decrease in the return of investment of 0.0114 in this time caused a decrease in total liquidity of 0.3835 (i.e., 8.782%). The increase in indebtedness means that the local governments had more liabilities in relation to their equity in a given period, which limits available liquid funds and reduces flexibility in covering short-term liabilities. Reducing debt frees up liquidity and the local self-governments have fewer liabilities and can use a larger portion of their funds to cover operating expenses and liabilities.

The most recent change occurred in 2016 when the Slovak government increased the ratio to 70%. The decrease in the indebtedness ratio in 2015–2016 by 0.0134 caused an increase in total liquidity by 0.3559 (i.e., 4.706%). A decrease in the total indebtedness in this time by 0.0068 caused an increase in total liquidity by 0.3032 (i.e., 4.009%). The increase in return of investment by 0.0039 over the time resulted in an increase in total liquidity of 0.0519 (i.e., 0.687%). This increase in returns suggests that better profitability on investments can directly contribute to better cash flow and thus to increased liquidity. Overall, these findings show that reducing debt and improving return on investments positively affect the liquidity of the local self-governments, which is one of the most important aspects of the financial stability of the local self-governments.

In addition to these changes, the Covid-19 has also entered into the financing of a local self-government in a significant way, not only due to the decrease in revenue from the

government as a result of the 'shutdown' of the economy, but also due to the fact that the local self-governments had to reassess their expenditure in relation to anti-pandemic measures that they had not budgeted for in a very short period of time. This is also confirmed by Vartašová and Červená (2021), who state that it was necessary to use public funds to implement government measures in connection with the solution to the pandemic, which had an impact not only on the state budget, but also on the budgets of the local self-governments. Examining the direct and indirect effects of implemented measures can be considered as a starting point for the search for alternative solutions in similar situations, with the target of minimizing the negative consequences of the resulting 'budgetary crisis' of local self-governments in Slovakia. The increase of 0.0149 in the 2019–2020 indebtedness ratio resulted in a decrease of 0.3398 (i.e., 4.867% in total liquidity). The 0.0067 increase in total indebtedness in this time resulted in a decrease in total liquidity of 0.2508 (i.e., 3.592%). The decrease in the return of investment of 0.0069 in this time caused a decrease in total liquidity of 0.0858 (i.e., 1.23%). This relationship suggests that higher levels of indebtedness negatively affect the ability of the local governments to maintain liquidity. Higher indebtedness means higher liabilities, which can limit cash availability. A smaller increase in debt again negatively affected liquidity, but to a lesser extent, suggesting that even a modest increase in debt has a negative impact on the financial flexibility of the local self-governments.

Overall, these relationships show that in 2019-2020, higher indebtedness and lower return on investment led to a significant decrease in the liquidity of the local self-governments, which indicates the negative impact of these factors on their financial stability during the pandemic.

Also, comparing 2020 and 2023, an increase of 0.0249 in the indebtedness ratio over this time resulted in a decrease in total liquidity of 0.5163 (i.e., 6.948%). The 0.007 increase in total indebtedness in this time achieved a decrease in total liquidity of 0.2569 (i.e., -3.458%). The 0.0212 decrease in the return on investment during this time reached 0.262 (i.e., 3.526%) decrease in total liquidity. This significant decline in liquidity indicates that higher levels of debt lead to a deterioration in the financial flexibility of the local governments. Higher debt means higher costs of servicing liabilities, which can lead to a reduced ability to meet short-term obligations. The smaller increase in debt still negatively affected liquidity, showing that even a relatively small increase in debt can have an impact on the financial stability of the local self-governments. Overall, these relationships indicate that in the period 2020–2023, the increase in indebtedness and the decrease in investment returns had a significant negative impact on the overall liquidity of the local governments, demonstrating that local governments face challenges in maintaining financial stability and flexibility.

5. Conclusion

The article highlights the importance of financial analysis for local self-government, which is crucial in managing public finances and making decisions about asset management. Financial analysis is a tool that can be used by local self-government management to

obtain information about the financial condition and performance of the local self-government, and at the same time, based on a selection of the right indicators, its long-term financial balance and the sustainability of its management can be assessed. At the same time, financial analysis can be used by local elected authorities to make decisions about the use of local self-government assets, whether for investments, public projects or the management of existing assets.

Financial analysis helps to reveal the strengths and weaknesses of the overall financial management of the local self-governments, making it a very useful and effective diagnostic tool for assessing their financial health. The basis of financial analysis is not only the calculation of financial ratios but also the correct interpretation with the subsequent search for causal relationships. Using the causal analysis model, we tried to find an answer to the question of which had a greater impact on the total liquidity of the local self-governments in Slovakia, the financial crisis or the Covid-19 pandemic.

Debt and return on investment are the key factors that affect the ability of the local self-governments to maintain healthy liquidity. An increase in debt and a decrease in return on investment lead to a deterioration in liquidity, which can threaten the ability of the local self-governments to meet their short-term obligations and their financial stability. It follows that proper debt management and effective investment are key to maintaining good liquidity. Conversely, the decline in indebtedness had a positive impact on liquidity, suggesting that the local governments could become less dependent on external sources of financing and gain greater flexibility in managing their liabilities.

The analysis showed that there was no difference between the year of the financial crisis and the Covid year 2020 in terms of the impact of the level of indebtedness ratio. In both cases, the increase in the indebtedness ratio caused a reduction in total liquidity. The effect of return on investment on total liquidity was similar. In both years, the decrease in the return on investment caused a decrease in total liquidity. We can observe the difference only for total indebtedness. In the year of the economic crisis, the decrease in total indebtedness caused an increase in total liquidity and in the Covid year, the increase in total indebtedness caused a decrease in total liquidity. The above results show that total indebtedness of the local self-government increased slightly in 2020 compared to 2010. One of the reasons for this was that the local self-government did not plan for pandemic spending in their draft budgets, so they looked for options for available financial resources, and this, in turn, was reflected in an increase in the local self-governments' liabilities to suppliers. Both crises that were the subject of the analysis also brought the positive results to the Slovak local self-governments in the form of the preparation of documents that, in the case of a future crisis, indicate the possible methodological approaches to solving not only financial problems, but also the overall management of the crisis.

In 2025, the 'fiscal package' will begin to be implemented in Slovakia, which will once again change the rules for financing local governments. Preliminary forecasts indicate that local governments will receive less funding from the state and will be forced to look for other financial sources to cover their needs. This again opens up the opportunity of using

financial analysis to determine the impacts of the package. It is important to recognize that the use of financial analysis in local self-government has its own specifications and that its primary objective is not to make a profit but to provide a service to its citizens. Therefore, analyses of the efficient management of the local self-governments should not only include financial indicators but also non-financial indicators.

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