Relation between Long-term Liabilities and Selected Indicators in the Case of Municipalities with Extended Powers in the South Moravian Region

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Abstract. The purpose of this article is to summarise data on long-term liabilities in municipalities with extended powers in the South Moravian Region and to determine whether these long-term liabilities correspond to the number of subsidized organizations and the rate of transfers to the income in the budget of the municipality. It is assumed that long-term liabilities per capita will be higher in municipalities with a larger number of subsidized organisations and that they will be higher in the case of municipalities with a higher rate of transfers to their budget income (i.e. in the case of municipalities that are less financially self-sufficient). Data provided by the Ministry of Finance of the Czech Republic was used which was processed via statistical methods (descriptive statistics, correlation analysis and cluster analysis).

Subject to the calculation of correlation coefficients, only the transfer ratio was usable for the cluster analysis because the value of the correlation coefficient between the long-term liabilities per capita and the number of subsidised organisations showed insignificant dependency. Therefore, we were unable to prove our assumption number one, that long-term liabilities if expressed on a per capita basis would be higher in the case of municipalities which operate a higher number of subsidized organisations. However, the outcomes of the cluster analysis did not confirm the second assumption. All we could declare was that extreme values appeared to have grouped up: municipalities with the highest (or lowest, as the case might have been) values of the long-term liabilities per capita showed the highest (or lowest, as the case might have been) transfer ratio.

Key words: *budget, municipality, cluster analysis.*

Reikšminiai žodžiai: *biudžetas, savivaldybė, klasterinė analizė.*

Introduction

Even though one of the first post-1989 reforms was the reform of the public administration, it took a very long time to take the shape it has now. Municipalities, as the basic units of local self-government, were formed in 1990 but the form and hierarchy of higher territorial units were not decided until several years later (Průcha 2011). Even though Constitutional act number 347/1997 Coll., on the establishment of higher territorial self-government units and on the amendment of constitutional act of the Czech National Council number 1/1993 Coll. established (effective 1 January 2000) fourteen regions (one of them being the City of Prague), the real-life creation of regions and the commencement of their activities was associated with the adoption of act number 129/2000 Coll., on regions (establishment of regions).

Following the dissolution of the so-called "county offices" as at 31 December 2002 three categories of municipalities were introduced for the purpose of the scope of their delegated authorities and the execution thereof: a) "ordinary" municipalities, b) municipalities with an authorised municipal office, c) municipalities with extended powers. The former three-level system of public administration (municipality – county – region) was replaced with a more complex system. The effectiveness (operational as well as financial) of this decision is debatable to say the least. However, after a decade of experience and continuous adjustments we can at least admit that the system has "settled down".

1. Status, competencies and financial management of municipalities

Pursuant to the Constitution of the Czech Republic, municipalities are the basic units of local self-government. Each municipality is a part of a higher territorial self-government unit – i.e. region. The scopes of activity and authority of municipalities and regions are in fact similar (they are based on the so-called "mixed model"). It allows for the coordination of the respective activities. The status and role of municipalities and their institutions are governed by act number 128/2000 Coll., on municipalities (establishment of municipalities), as amended. The basic framework of the financial management of municipalities is governed, in addition to the aforementioned act, by act number 250/2000 Coll., on municipal budgetary rules, as amended.

Municipalities are public corporations which own property and have their own income; they manage their financial affairs in accordance with the applicable legislation and their respective budgets. Municipalities establish legal relations on their own behalf and they bear responsibilities arising out of these relations. Municipalities manage their affairs on an independent basis. Authorities of the state may intervene in this self-governing authority only within the boundaries defined by the applicable legislation. Their institutions carry out state administration pursuant to the applicable law as the so-called "delegated authority". Municipalities with an

authorised municipal office (383 in the Czech Republic) perform state administration within their respective local districts beyond the scope of delegated authority of municipalities with an "ordinary" municipal office, whereas municipalities with extended powers (205 in the Czech Republic) perform state administration within their respective local districts beyond the scope of the delegated authority of the municipalities with an authorised municipal office.

Municipalities are managed on an independent basis by their respective assemblies. Other statutory bodies include the council, mayor and the municipal office.

Financial management of a municipality is subject to its respective annual budgets, which in itself is based on a budget outlook. Typically, the budget of a municipality is drawn up to be balanced; a budget deficit is only acceptable if it can be compensated from past revenue, or via a contractual loan, via earnings from public bonds or a repayable financial assistance (section 4 of act number 250/2000 Coll.). Their income is represented by earnings from their own assets and rights to these assets, shares of joint taxes pursuant to act number 243/2000 Coll., on budgetary determination of revenues from taxes, transfers from the state budget and other funds within the framework of the budgetary system, revenues from their own moneymaking activities etc. Czech municipalities have a very limited authority in terms of taxation: within the limits of the applicable legislation, they can only impose the real estate tax and local fees (pursuant to the budgetary structure, they are treated as taxes); i.e. their income is based on transfers from the state budget and other funds within the framework of the budget systems. Their expenses contribute to the performance of the state administration and other acts within the scope of their authority etc.

2. Short overview of related literature

Related literature focusing on the financial management and debts of municipalities is quite extensive and fairly differentiated. Publications can be generally divided by their main focus into three groups: a) publications focusing on the ratings of indebted entities, b) publications searching for limits of indebtedness of municipalities and regions, c) publications searching for and describing various factors that affect indebtedness. Here, a special subset consists of publications exploring the political business cycle at the local level. Various connections with fiscal federalism or fiscal decentralization are very often reflected in these texts.

The theory of public economy generally recommends to central governments as well as governments at lower levels (municipalities and regions) to finance ordinary expenditure from ordinary income (naturally, mainly tax income), capital expenditure from capital income (Gruber 2011), (Stiglitz 2000). Even loans or income from bonds issued can be included in them. I. e. indebtedness (whether in the form of a received loan as well as bond issue) is permitted only in connection with the acquisition of

investments. Even Musgrave and Musgrave (1994, 513) recommend "financing of public investments from a loan that will be repaid over a longer period (when the loan is repaid along with the use of the investment) to ensure intergenerational equity". A similar view, i.e. to use loans to finance local capital projects, is shared also by Holtz-Eakin (1991).

Based on a data analysis from 49 U.S. states on a time series 1961-1990, Kiewiet and Szakaty (1996) concluded that the level of indebtedness was influenced by two factors: the amount of personal income per capita and left-oriented government. The effect of various socio-economic factors (e.g. population, share of immigrants in the population, transfers and tax revenues, etc.) at the level of debt per capita is admitted even by Guillamón et al. (2011). On the other hand, they point out an interesting fact that weaker governments had lower levels of debt (analysed data came from 3,253 municipalities with population over 1,000 in Spain).

The same authors (Guillamón et al. 2013) again proved on a sample of Spanish municipalities with population over 20,000 (time series 2001-2008) the influence of population on the level of spending, and at the same time they suggested that the spending of these municipalities always increased the year before local elections. In their opinion, this supports the assumption of the political business cycle at the local level in Spain. Veiga and Veiga (2007) describe how municipal governments increase spending in the pre-election period. They also change the composition so that the spending is more visible to the voters, while local taxes tend to decrease one or two years before the elections (and the budget deficit grows).

Even in the case of other authors, we encounter reference to the influence of population and income level per capita on the level of debt of local governments. For example, Rivers and Yates (1997) theoretically explain that population growth results in growth of requirements for the local public sector, and thus ultimately leads to higher debt.

Empirical studies on sample of Czech municipalities are very modest, more attention is dedicated to the state budget (the financial management of Czech municipalities is generally perceived as prudent and stable). Several aspects of evaluation of public expenditure of local governments are described by Provazníková (1999). Some attention is paid to problematic aspects of the financing of municipalities (e.g. local taxes, local fees, transfers) (Kruntorádová 2013). But a lot of papers tend to be rather articles in newspapers than scientific reports (see Deník veřejné správy on line).

3. Aim, sources of data and methodology

The text has two aims: a) to summarise data on long-term liabilities of municipalities with extended powers in the South Moravian Region, b) to determine whether these long-term liabilities reflect the selected indicators (number of

subsidized organisations and the ratio of transfers to the budget of the municipality). The initial assumptions for the analysis are as follows:

– long-term liabilities per capita are higher in the case of municipalities which operate a higher number of subsidized organisations (as they receive funds for the operation and investments from the municipality),
– long-term liabilities per capita are higher in the case of municipalities which also have a higher ratio of transfers to the budget income (i.e. they are not as self-sufficient in terms of financial management).

The South Moravian Region was selected on purpose: it is one of the largest, most populous and most significant regions in the Czech Republic in terms of economy. Its number of municipalities with extended powers is above average, compared with other regions of the Czech Republic (there are twenty-one of them in the South Moravian Region, whereas the national average is fourteen).

Considering the subject matter of the analysis we could only use secondary data from official statistics. The data on the municipalities with extended powers in the South Moravian Region was obtained from the Monitor of state administration and autonomy of the Ministry of Finance of the Czech Republic. The data set used applies to the last year available (2014). This secondary data was processed via descriptive statistics methods and via the correlation and cluster analysis.

We used STATISTICA 12 software for calculations as well as the cluster analysis.

4. Long-term liabilities of municipalities with extended powers in the South Moravian Region

There are 672 municipalities in the South Moravian Region, which makes it one of the largest regions in the Czech Republic. It is also a significant region in terms of the national economy, science and public life (it is home to some of the highest judicial institutions or many colleges and universities; it is a centre of science and research etc.). Pursuant to the provisions of act number 314/2002 Coll., of the total number of municipalities, thirty-four of them are municipalities with an authorised municipal office and twenty-one of them are municipalities with extended powers (which, in both cases, includes Brno as the seat of the region). Due to the special status of the City of Brno (seat of the region, second largest city in the Czech Republic whose size and significance are incomparable with those of other municipalities in the region) the city was not included in the further analysis, as it could significantly compromise the results. Therefore, only the remaining twenty municipalities with extended powers are included (as Brno is not).

Basic data for these municipalities for the year 2014 will be listed first. This data includes: long-term liabilities (liabilities due in more than 12 months), number of inhabitants (population), number of subsidized organisations operated by the municipality and the ratio of transfers to the budget income.

Table 1. **Selected indicators of municipalities with extended powers
in the South Moravian Region in 2014**

Municipality	Long-term liabilities (CZK)	Population	Number of subsidized organizations	Transfer ratio (%)	Long-term liabilities per capita (CZK)
Blansko	165,562,190	20,845	13	24.8	7,943
Boskovice	36,429,600	11,470	5	25.6	3,176
Břeclav	71,814,486	24,956	18	19	2,878
Bučovice	98,172,319	6,564	7	44.3	15,187
Hodonín	193,017,547	25,049	14	26.6	7,706
Hustopeče	64,121,127	5,862	7	35.1	10,938
Ivančice	133,926,915	9,580	11	19.4	13,979
Kuřim	86,528,907	10,900	4	14	7,938
Kyjov	70,031,668	11,448	13	21.1	6,117
Mikulov	6,969,921	7,416	6	12.7	940
Mor. Krumlov	56,270,550	5,846	6	23.3	9,625
Pohořelice	82,138,861	4,711	2	33.3	1,436
Rosice	18,091,465	5,856	8	27.5	3,089
Slavkov	53,681,457	6,299	7	31.5	8,522
Šlapanice	162,600,403	7,171	3	47.3	22,675
Tišnov	76,650,098	8,921	8	20.1	8,592
Veselí n./Mor.	37,067,279	11,357	4	21.8	3,262
Vyškov	2,936,359	21,341	20	13.2	137
Znojmo	382,809,686	33,805	18	14.5	11,324
Židlochovice	31,626,910	3,659	2	32.9	8,644

Source: Monitor of state administration and autonomy, Ministry of Finance of the Czech Republic, own calculation.

Based on the data provided above we can say that the towns of Znojmo, Hodonín, Blansko, Šlapanice and Ivančice recognize the highest amount of long-term liabilities. Of particular interest is the comparison of the number of subsidized organisations operated by the municipalities; it would be inaccurate to say that similarly sized municipalities have a similar number of subsidized organisations (for example, Kuřim and Kyjov are similar in size but the numbers of their respective subsidized organisations are not). The most typical subsidized organisations operated by municipalities include kindergartens and elementary schools. There are also some less usual organisations, such as Lázně Hodonín *(Hodonín Spa)* in Hodonín and the Slavkov (Austerlitz) Chateau in Slavkov. If a subsidised organisation is

founded by a municipality, it receives from the municipality' budget a contribution for its operation and investments or a levy (the latter is very rare).

The range of the ratio of transfers to public budgets of the municipalities is also interesting, being between 12.7 % (Mikulov) and 47.3 % (Šlapanice). These transfers are of investment and non-investment nature; they are granted from the state budget, the budget of the region, state funds and other entities within the public budget system. In a way, these transfers can be interpreted as a certain degree of the lack of financial self-sufficiency of the municipal budgets. Therefore, from this point of view Šlapanice (and, to a lesser extent, also Bučovice – 44.3 %) is the least financially self-sufficient municipality.

A different perspective is achieved once the long-term liabilities are expressed per capita (see Table 1, last column).

We can clearly see that Šlapanice shows the highest value of the long-term liabilities per capita, followed by (a much lower value in the case of) Bučovice, Ivančice and Znojmo. Vyškov and Mikulov are at the opposite end of the table (less than CZK 1,000 per capita).

5. Results and discussion

Correlation between long-term liabilities of municipalities and selected variables

The dependency of the amount of long-term liabilities per capita for municipalities with extended powers in the South Moravian Region and selected indicators was measured using the correlation coefficient r_{xy}.

The calculation was based on the long-term liabilities of the municipality per capita which, in our opinion, better reflects the financial management of municipalities, compared with a simple sum of long-term liabilities (in which case the size of the municipality would not be taken into consideration).

In the calculation, the variable x was the sum of long-term liabilities per capita of the municipality, whereas the variable y is represented by the respective quantity. The results are as follows:

- the value of the resulting correlation coefficient between long-term liabilities per capita and the number of subsidised organisation operated by the municipality is $r_{xy} = -0.35779852$,
- the value of the resulting correlation coefficient between long-term liabilities per capita and the transfer ratio is $r_{xy} = 0.684266389$.

Based on the aforementioned results we can declare medium linear dependency between the long-term liabilities per capita and the ratio of transfers to the municipal budget income. On the other hand, the value of the correlation coefficient between the long-term liabilities per capita and the number of subsidised organisations was a surprise. This value (negative and close to zero) only suggests weak indirect linear dependency (it was a surprise because the founder – municipality – grants subsidies

to these organisations, which is why expected at least medium linear dependency, which was not confirmed).

Results of cluster analysis

The cluster analysis may only take into account any variables that show at least medium dependence. Therefore, we can only use two variables: long-term liabilities per capita (Variable 1) and transfer ratio (Variable 2). The results of descriptive statistics are as follows:

Table 2. **Results of descriptive statistics**

Descriptive statistics	Variable 1	Variable 2
Average	8,505.45	25.4
Minimum	137	12.7
Maximum	22.675	47.3
Median	8,232.5	24.05
Standard deviation	5,574.124	9.467946

Source: own calculation based on Table 1.

Since the data is expressed in different units of measure (CZK, %) and since it shows significantly different levels and variability, it will have to be standardised prior to the cluster analysis. If this standardisation is not carried out, the final result of clustering would be determined solely by the first variable and it would be substantially different from the potential result which would have been determined by both variables equally. The standardised values are as follows.

Table 3. **Standardised data for cluster analysis**

Municipality	Variable 1	Variable 2
BL: Blansko	0.856102711	1.03559693
BO: Boskovice	-0.637023371	-0.0813494377
BR: Břeclav	-0.227877266	1.52538536
BU: Bučovice	0.0768914053	-0.665854917
HO: Hodonín	1.17356176	1.53646546
HU: Hustopeče	-0.316833548	-0.749491861
IV: Ivančice	0.490312369	-0.306525825
KU: Kuřim	-0.0577382969	-0.149259777
KY: Kyjov	-0.248491521	-0.0839705385
MI: Mikulov	-0.97765787	-0.564346831

Municipality	Variable 1	Variable 2
MK: Mor. Krumlov	-0.407607699	-0.751398116
PO: Pohořelice	-0.108499241	-0.886623089
RO: Rosice	-0.84906239	-0.750206707
SL: Šlapanice	0.821856349	-0.593536363
SV: Slavkov	-0.437544699	-0.697427268
TI: Tišnov	-0.17196436	-0.385039708
VN: Veselí nad Mor.	-0.629650057	-0.0948123645
VY: Vyškov	-1.02429688	1.09469084
ZN: Znojmo	3.36807821	2.57966358
ZI: Židlochovice	-0.692555609	-1.01195936

Source: own calculation based on Table 1.

To assess distance the Euclidean distance square was chosen; the clusters were formed using the Ward's method.
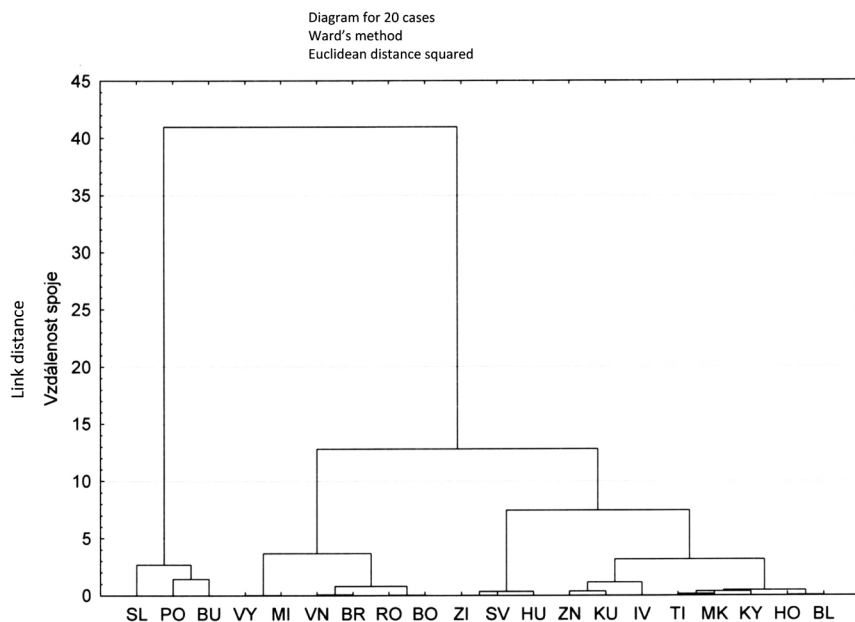

Fig. 1. **Clustering dendrogram (Source: Table 3)**

Based on the assessment of the result of clustering the following four clusters were determined:

Cluster	No. of municipalities	Cluster members
S1	3	Šlapanice, Pohořelice, Bučovice
S2	6	Vyškov, Mikulov, Veselí nad Moravou, Břeclav, Rosice, Boskovice
S3	3	Židlochovice, Slavkov, Hustopeče
S4	8	Znojmo, Kuřim, Ivančice, Tišnov, M. Krumlov, Kyjov, Hodonín, Blansko

The cluster S3 is most homogeneous; the cluster S2 is most heterogeneous.

The municipalities in the first cluster (Šlapanice, Pohořelice, Bučovice) show some of the highest values of the long-term liabilities per capita (in the case of Šlapanice, the highest of all municipalities) and, at the same time, they show values that are well above average in terms of the transfer ratio (again, in the case of Šlapanice, the highest of all municipalities).

The municipalities in the second cluster (Vyškov, Mikulov, Veselí n./Mor., Břeclav, Rosice, Boskovice) typically show values of the long-term liabilities per capita which are well below average (in the case of Vyškov and Mikulov they are the lowest of all) and, at the same time, they show values of the transfer ratio which are well below average to average.

The municipalities in the third cluster (Židlochovice, Slavkov, Hustopeče) do show, on the one hand, average values of the long-term liabilities per capita, but on the other hand the value of the transfer ratio is slightly above average.

The municipalities in the last (and largest) cluster (Znojmo, Kuřim, Ivančice, Tišnov, Moravský Krumlov, Kyjov, Hodonín and Blansko) showed more or less average values of the long-term liabilities per capita, whereas the transfer ratio was below average or average.

The results do not allow for a reliable conclusion that municipalities showing a certain value of long-term liabilities per capita would also show a certain value of transfer ratio with regard to their budget income. In other words, we cannot confirm our initial assumption that municipalities with a higher value of long-term liabilities per capita would also show a higher value of transfer ratio with regard to their budget income. We can only conclude that extreme values always seem to group up: municipalities with the highest values of long-term liabilities per capita (Šlapanice, Pohořelice, Bučovice) show, at the same time, the highest values of transfer ratios, whereas municipalities with the lowest values of long-term liabilities per capita (Vyškov, Mikulov) show, at the same time, the lowest values of transfer ratios. As for the remaining municipalities, the link between these two indicators was not as tight.

Furthermore, we cannot conclude that equally (similarly) sized municipalities would show similarities when it comes to these indicators. Šlapanice, Pohořelice and Bučovice belong to the same category (in terms of population), whereas Vyškov and Mikulov (being the municipalities with the lowest values of both indicators) are very different in terms of size (Vyškov had 21,341 inhabitants, while Mikulov had "only" 7,416 inhabitants).

Conclusion

1. The reform of the system of public administration was among the first reforms after 1989 when municipalities were defined as the basic unit of local self-government. Regions were established as higher territorial self-government units after 2000 (following the adoption of act number 129/2000 Coll.). Municipalities are public corporations that own property and have their own income and they manage their finances on an independent basis in accordance with their respective annual budgets.
2. The text had two goals (see above). We assumed that the long-term liabilities per capita will be higher in the case of municipalities with a higher number of subsidized organisations and, at the same time, they will be higher in the case of municipalities with a higher ratio of transfers to the budget income (i.e. in the case of municipalities which are far less financially self-sufficient).
3. Having calculated the correlation coefficients, we could only include the transfer ratio in our subsequent analysis. The value of the correlation coefficient between the long-term liabilities per capita and the number of subsidized organisations only showed a slight correlation, which is why the number of subsidized organisation could not be included in the cluster analysis. Therefore, our first assumption could not be confirmed (i.e. that long-term liabilities per capita will be higher in the case of municipalities which operate a higher number of subsidized organisations).
4. The results of the cluster analysis have not confirmed the second assumption that municipalities with a higher ratio of transfers (i.e. less financially self-sufficient municipalities) will have higher long-term liabilities per capita. We could only declare that only extreme values have become clustered: municipalities with the highest/lowest amounts of long-term liabilities per capita showed the highest/lowest transfer ratio. As for the remaining municipalities, the link between these two indicators was not as tight. Therefore, to offer a short summary, we can say that highly self-sufficient municipalities show low values of long-term liabilities per capita, whereas municipalities which are far less financially self-sufficient show high values of this indicator. This value cannot be safely predicted in the case of the remaining municipalities.

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**Ilgalaikių įsipareigojimų ir atrinktų subjektų santykis savivaldybėse
su išplėstais įgaliojimais Pietų Moravijos regione**

Anotacija

Šio straipsnio tikslas yra apibendrinti duomenis apie ilgalaikius įsipareigojimus savi-valdybėse su išplėstais įgaliojimais Pietų Moravijos regione ir patikrinti ar šie ilgalaikiai įsipareigojimai yra susiję su steigiamų subsidijuojamų organizacijų kiekiu ir transferų dalimi savivaldybių biudžeto pajamose. Tikėtina, kad ilgalaikių įsipareigojimų kiekis vienam gy-ventojui bus didesnis tose savivaldybėse, kuriose yra įsteigta daugiau subsidijuojamų orga-nizacijų ir taip pat bus didesnis savivaldybėse su didesne transferų dalimi savivaldybių biu-džeto pajamose (t. y. savivaldybėse, kurios finansiškai nėra savarankiškos). Buvo panaudoti ČR Finansų ministerijos duomenys parengti pagal statistikos metodus (aprašomoji statistika, koreliacinė ir klasterinė analizė).

Apskaičiavus koreliacijos koeficientus į grupių analizę galima būtų įtraukti tik trans-ferų dalį: koreliacinio koeficiento vertė parodė labai silpną priklausomybę tarp ilgalaikių įsipareigojimų/gyventojui ir subsidijuojamų organizacijų kiekio. Dėl šios priežasties negalėjo būti patvirtinta mūsų pirmoji prielaida, kad ilgalaikiai įsipareigojimai vienam gyventojui bus didesni savivaldybėse, kuriose yra įsteigtas didesnis kiekis subsidijuojamų organizacijų. Klasterinės analizės rezultatai nepatvirtino nei antrosios prielaidos, galėjome padaryti tik išvadą, kad visada susisiejo ekstremalios vertės: savivaldybėse su aukščiausiomis (arba su žemiausiomis) ilgalaikių įsipareigojimų vertėmis/gyventojui mes užregistravome aukščiau-sią (arba žemiausią) transferų dalį.

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