THE IMPROVEMENT OF INTERBUDGET RELATIONS NATIONAL MODEL AS A TREND TO BOOST THE RUSSIAN FEDERATION INDUSTRIAL CITIES TAX POTENTIAL

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Abstract. *The topical character of the given paper in the positive effects of the interbudget relations working model is presupposed by the dependence management of financial stability in the Russian industrial cities, caused by transfers from the higher level budgets and bringing about the lack of motives to create favorable conditions for business structures functioning, for enlarging their own tax basis of territorial formations. Aim: working out and finding foundations for a complex methodological approach to the estimation of interbudget relations national model effectiveness as a trend to enhance the tax potential of Russian industrial cities. Using the instruments of the correlation analysis, the character and trend of relations between the scope of interbudget transfers' different types and the figures of the integral indicator of an industrial plant are explained. The method of average figures is applied in the process of the norms optimal figures calculation for interbudget transfers, which condition the maximal increment of the integral indicator, characterizing the tax potential of the territorial formation and the balance of all the state government levels and the tax-payers' economic interests. The paper expounds the results of exploring and finding grounds for the principally new complex methodological approach to estimation of the national model effectiveness in interbudget relations through comparing the criteria of "interbudget transfers" and "the integral indicator of tax potential", introduced by the authors. Its systematized mathematical algorithm is represented. The expediency of the introduced criteria practical application and of the represented mathematical algorithm are investigated in the estimation of the*

financial providing leveling positive effects with state instruments on the example of major industrial cities of the Ural Federal District. The carried out research contributes to the development of ideas about the interbudget regulation on the basis of all levels of power and economic subjects' interest's coordination by means of stimulating the process of tax potential boosting. The results of using the complex methodological approach to estimating the interbudget relations model organization effectiveness through comparing the criteria "interbudget transfers" and "the integral indicator of tax potential" are of objective character and can be used by different countries' financial-budgetary bodies of management in the process of: forming the offers to correct the mechanism, distributing transfers, aiming at stimulating the social-economic development of territorial formations; regular monitoring of asymmetry in the budgetary environment and the correspondence of results in territorial financial policy factual indicators to optimal figures.

Keywords: *budget; subsidies; tax revenues; tax potential; non-tax incomes; subventions; interbudget transfers.*

Introduction

The modern economic situation in the industrial cities of the Russian Federation is characterized by the chronic lack of their own resources to cover the expenses of the local budget. The state applies the instruments of horizontal and vertical leveling in financial providing of the territories and orients on the distribution of revenue powers among the Russian Federation, the subjects of the Russian Federation and municipal organizations, which leads to the high level of revenues centralization in the federal budget and, accordingly, to negative effects. The negative effects of the national budgetary practice are the resource dependence on the higher level, the decrease of interest on the part of the government bodies in industrial cities to the expanding of their own revenue basis, as well as the arising temptation to increase the amount of expenditures and the deficit of local budgets. It is noteworthy that "many fiscally decentralized economies rely heavily on transfers from upper to lower-level governments as well as on equalizing transfers between lower-level governments" (Lundqvist, 2015, p.43). That is why the increase and solidifying of an industrial city tax potential requires, first of all, working out and practical application of the stimulating mechanisms, instigating modern territories to try to enhance the total resource basis.

Founding grounds for the topical character of the research subject-matter, it seems appropriate in Table 1 to depict the content of interbudget relations traditional models, presupposing the specifics of not only the revenue sources distribution but also of municipal territories.

Comparing the traditional models of interbudget relations organization, it seems expedient to note that the system of state-used instruments of territorial financial providing leveling changes depending on the condition of outer and inner social-economic environment, its historical and political-legal specifics. With this, "the budgetary federalism model effectiveness becomes maximal only as a result of a long-term step by step agreement of interests between the society and the state, on the one hand, and the federation, territorial communities and the local population, on the other" (Wildavsky, 2004, p.157).

Table 1. Review of interbudget relations traditional models' contents (Composed by the authors)

Name of the model	Specifics of the model	States, using the model
German model	The model is aimed at the decrease of horizontal disproportions in the level of financial providing and realized using redistribution of tax sums, first of all, from the interest rate tax and providing the substantial amount of interbudget transfers. The system of interbudget leveling presupposes the existing taxes, the sums of which are distributed among all the levels of the budgetary system, their partial redistribution to cover the gaps in the territorial financial providing rate.	Germany
Anglo-Saxon model	The Anglo-Saxon model of interbudget relations is characterized by decentralization of the budgetary system – the municipal organizations have a substantial level of independence, affording them to introduce additional and double taxes. The system of interbudget leveling presupposes the active use of purpose grants.	The USA, Great Britain, Canada, India, etc.
The unitary model of interbudget relations	The unitary model of interbudget relations is characterized by the decrease of the territorial financial providing level disproportions through transfers, defined as the difference between the basic financial needs and the basic financial revenues, which, by no means, are related to the factual replenishing of the local budgets.	Japan, Sweden, Denmark, etc.

Recognizing the importance of foreign experience in the organization of interbudget relations, its copying in the conditions of the Russian Federation is impossible and fruitless, because:
- first, there are significant differences in the self-organization of some state regions potential;
- second, the system of national budgetary management is based on the principles of self-government and subsidiaries, which presupposes the basic role of municipal bodies in satisfying the social needs;
- third, the level of territorial financial stability is traditionally characterized by significant horizontal and vertical disproportions, requiring certain amounts of financial resources for their decrease.

No doubt, the stated problem is perceived and discussed at different government levels. Though, in our opinion, this problem cannot be solved positively without the complex research of the national model of interbudget relations as the trend to enhance the Russian Federation industrial cities tax potential as the instrument to coordinate economic interests of all the government levels and tax-payers. The formed interbudget relations national model estimation mechanism does not reflect the real situation with resource providing of the territories and distorts its social-economic dynamics rating (Zenchenko, 2009, p.3).

Moreover, in the course of the problem under consideration analysis, it was clarified that by the present time there are practically no publications, devoted to the working out of approaches to the interbudget leveling national model effectiveness estimation

and proliferation of their test results. Most of the works are based on the analysis of certain criteria of the territorial formations revenue powers distribution quality and do not concern the issues of holding the total estimation. Here belong the papers by Avetisyan (2011), Bahl (1986), Bahl and Linn (1994), Boik (2013), Boadway, Cuff and Marchand (2003), Chernyavsky and Vartapetov (2004), Jack (2005), Kizeev (2011), Kimelman (2010), Liberati and Sacchi (2013), Lundqvist (2015), Marques, Nazrullaeva and Yakovlev (2016), Mello (1999, 2000), Nortman (1971), Pechenskaya and Uskova (2012), Siluanov, Starodubrovskaya and Nazarov (2009, 2011), Staats (1974), Vasilieva et al. (2017), Verbinenko and Badylevich (2013).

The investigation of different approaches to the estimation of interbudget relations organization effectiveness and the practice of their realization enables us to note that by now their conceptual contents are incomplete:
- first, the approaches to the study of interbudget relations' effectiveness are considered separately from the conditions of the state financial system functioning;
- second, most of the approaches are based on the analysis of certain quality criteria of territorial formations revenue powers distribution and do not concern the aspects of carrying out total estimation;
- third, the study of interbudget relations as a trend to boost the tax potential of the territories, which is a key instrument to arise interest in all levels of power and taxpayers in actions and results, as well as in the coordination of their economic interests – all this has not yet become the object of special research.

The above-mentioned circumstances determined the topical character and practical importance of scientific research, in whose framework the complex methodological approach to the estimation of the interbudget relations current national model effectiveness as a trend to enhance tax potential of industrial cities in the Russian Federation is formed.

Methodology

Paying its due to the significant research work, made in the field of comprehending and studying interbudget regulation processes effectiveness, its role in the management of the social-economic development of territories and the state, on the whole, within the limits of the present paper, the authors tried to eliminate the above-mentioned gaps. The methods of economico-statistical estimation effectiveness, proposed by the authors, and covering the current national model of interbudget relations as a trend to enhance the tax potential of the territories, presuppose two stages.

Within the first stage, with the help of statistical research, the interrelation between the volume of interbudget transfers of different kinds (grants, subsidies, subventions and other transfers) and the figures of the integral indicator of the municipal territory tax potential is explicated and analyzed. It is noteworthy, that it is in the process of dependences statistical research that the cause-effect relations among the phenomena are expounded as "the relation of phenomena and processes, when the change of one of them – the cause – results in the change of the other – the effect" (Vasilieva et al., 2017, p.638).
In order to divulge the existing relation, its character and trend between the volume of interbudget transfers into the budget of the territorial formation and the integral indicator of the tax potential, it is proposed to point out factor markers (factors) and

result markers, necessary for the research. As a factor marker, in view of the analysis, we recommend to take the number of grants, subsidies, subventions, and other transfers into the local budget from the higher level budgets; and as a result marker – to take the integral marker, characterizing the level of the territorial formation tax potential.

The close-knit character of the relation is quantitatively expressed with the correlation coefficient figure, as well as the close correlation link between the grants, subsidies, subventions and other transfers, coming into the local budget from the higher level budgets and the integral indicator of the territorial formation tax potential and can be measured by the determination coefficient. The determination coefficient is an indicator, representing a relative figure, characterizing the ratio of the intergroup dispersion in the general dispersion of the resulting marker and reflecting the factor marker influence strength on the formation of the resulting marker general variation (Vasilieva et al., 2017, p.639):

$$R^2 = \frac{\delta^2}{\sigma^2}$$

$$(1)$$

where δ^2 – is the average square deviation of the mean figures in the resulting marker; σ^2 – is the average square deviation of factual figures in the resulting marker.

For the qualitative estimation of the close relation, based on the determination coefficient indicator, it is generally accepted to apply Chaddock ratio, represented in Table 2.

Table 2. Chaddock correlation (Vasilieva et al., 2017, p. 638)

R²	0,1-0,3	0,3-0,5	0,5-0,7	0,7-0,9	0,9-0,99
Relation force	Weak	Average	Notable	Close	Very close

On the second stage the authors propose the calculation of threshold levels of interbudget transfers ratio in the total revenues of the local budgets, where the maximal increment of the integral indicator is noted and it characterizes the territorial formation tax potential, and the balance of economic interests of all the power levels and the tax-payers is kept with the help of the mean balanced figure:

$$\bar{x} = \frac{x_1 f_1 + x_2 f_2 + \ldots + x_n f_n}{f_1 + f_2 + \ldots + f_n} = \frac{\sum xf}{\sum f}$$

$$(2)$$

where $f_1, f_2 \ldots f_n$ – are balances (frequencies of the same indicators' repetition); $\sum xf$ – is the total of the indicators figure multiplied by their frequencies; $\sum f$ – is the total number of integral units.

The calculation of threshold levels in the ratio of interbudget transfers figures in the total budgets revenues of territorial formations is recommended to supply with the found analogous figures by the current date and their comparison.

Results

In this article, there was an attempt to clear up the expediency of the practical application of the complex approach to results estimation of the interbudget relations current national model for the field of investigation – major industrial cities, included in the Ural Federal District of the Russian Federation. Regarding this fact, N.A. Kharitonova, E.N. Kharitonova, and N.L. Levinson noted: "Economic restructuring within the Russian Federation has considerably reduced the number of industrial giants, many of which proved unviable in the new economic conditions. However, those that remain, are leaders in Russian industry, and their success determines the life not only of the local municipalities but often also of the whole region where they are located; as before, they continue to determine the economic and industrial potential of the region" (Kharitonova, Kharitonova and Levinson, 2007, p.250).

The rationality of the research range choice is determined not only by industrial specialization of territorial formations but also by a high dependence of local budgets on the resources of the higher level budgets, that is pointed out by the authors, by the gradual decrease of interest on the part of the municipal bodies of power to expand their own revenue base. In particular, the specific weight of interbudget transfers in the total revenues of local budgets of the Russian Federation Ural Federal District industrial cities during the period under consideration increased from 41,3 % in 2007 up to 48,3 % in 2017, which is reflected in Table 3.

Table 3. The structure of revenues into local budgets of the industrial cities of the Russian Federation Ural Federal District in 2007-2017, % (Calculated by the authors, according to the official data of the Russian Federation Finance Ministry, 2017)

Type of income	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tax incomes	43,0	41,8	38,3	39,0	40,9	44,8	41,7	42,7	42,0	44,2	39,3
Non-tax incomes	15,7	17,3	14,8	13,5	12,8	11,8	11,8	11,2	13,1	12,4	12,4
Interbudget transfers	41,3	40,9	46,9	46,6	46,3	43,4	46,6	46,1	44,9	43,4	48,3

The results of the first stage, presupposing the divulging of the relation between the volume of interbudget transfers into the Russian Federation industrial city budget and the integral indicator of the tax potential, using the determination coefficient, are represented in Table 4 and are based on the following dependencies:
- the ratio between the scope of grants into the Russian Federation industrial city budget and the integral indicator of the tax potential is expressed by the formula: y = -5E-15x3 + 4E-09x2 - 0,0012x + 103,53;

- the ratio between the scope of subsidies into the Russian Federation industrial city budget and the integral indicator of the tax potential is expressed by the formula: y = -8E-16x3 + 2E-10x2 - 2E-05x + 0,18;
- the ratio between the scope of subventions into the Russian Federation industrial city budget and the integral indicator of the tax potential is expressed by the formula: y = 1E-14x3 - 3E-08x2 + 0,0252x - 7704;
- the ratio between the scope of other transfers into the Russian Federation industrial city budget and the integral indicator of the tax potential is expressed by the formula: y = 5E-12x2 - 2E-05x + 23,09 (Table 4).

Table 4. The degree of relation between the scopes of interbudget transfers into the budget of the industrial city and the integral indicator of the tax potential (Calculated by the authors, according to the official data of the Russian Federation Finance Ministry, 2017)

Factor, X	Result, Y	Existing relation	
		R^2	Force of relation
The total sum of grants into the local budget	The integral indicator of the tax potential	0,9533	Rather close
The total sum of subsidies into the local budget		0,8710	Close
The total sum of subventions into the local budget		0,9888	Rather close
The total sum of other transfers into the local budget		0,7710	Close

Because the determination coefficient reflects the ratio of the result marker Y variations under the influence of the factor marker X, the analysis of calculated figures of the determination coefficient testifies to the existence of a close functional relation between the scope of interbudget transfers into the local budget and the integral indicator, characterizing the level of the Russian Federation industrial city tax potential. In particular, by 95,33% the variation of the integral indicator of the tax potential is preconditioned by the change in the volume of incoming grants into the local budget and by 4,67 % - by the other factors; by 87,10% the variation of the integral indicator of the tax potential is preconditioned by the change in the volume of incoming subsidies into the local budget and by 12,90% - by the other factors; by 98,88% the variation of the integral indicator of the tax potential is preconditioned by the incoming subventions into the local budget and by 11,12% - by the other factors and, finally, by 77,10% the variation of the integral indicator of the tax potential is preconditioned by the change in the scope of other transfers into the local budget and by 22,90% - by the other factors.

The final results of the second stage, presupposing the clarification of the threshold values in the ratio of interbudget transfers in the total revenues of the local budgets, are represented in Table 5, while in the local budgets there is noted the maximal increment of the integral indicator, characterizing the tax potential of the territorial formation, using the average balanced figure.

Table 5. The degree of correspondence in the interbudget transfers ratio figures in the total revenues of the local budgets to the requirements of enhancing the tax potential of the Russian Federation industrial city (Calculated by the authors, according to the official data of the Russian Federation Finance Ministry, 2017)

Result, У	Factor, X	The threshold value of the interbudget transfers ratio in the total revenues of the local budgets/threshold value of the interbudget transfers special type ratio in their total volume, %
An integral indicator of the tax potential	The total sum of grants into the local budget	43,4/14,0
	The total sum of subsidies into the local budget	43,4/23,1
	The total sum of subventions into the local budget	43,4/56,0
	The total sum of other transfers into the local budget	43,4/6,9

The results of the calculations testify to the fact, that the optimal ratio of the interbudget transfers in the total revenues of the local budgets, stimulating the solidifying and increasing of the territorial formation tax potential, is at the level of 2012 and is substantially different from the figures of 2017, which is represented in a systematized way in Table 6.

Table 6. The detailed structure of the local budget's revenues in the industrial cities of the Russian Federation Ural Federal District in 2007-2017, % (Calculated by the authors, according to the official data of the Russian Federation Finance Ministry, 2017)

Type of income	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total tax incomes	43,0	41,8	38,3	39,0	40,9	44,8	41,7	42,7	42,0	44,2	39,3
Total non-tax incomes	15,7	17,3	14,8	13,5	12,8	11,8	11,8	11,2	13,1	12,4	12,4
Total interbudget transfers	41,3	40,9	46,9	46,6	46,3	43,4	46,6	46,1	44,9	43,4	48,3
including:											
Grants	23,9	24,0	23,9	21,2	21,3	14,0	16,0	15,2	12,6	13,7	22,0
Subsidies	31,1	23,5	31,1	29,4	29,5	23,1	31,0	32,2	27,1	23,7	29,0
Subventions	37,6	49,7	37,6	40,9	40,7	56,0	46,0	45,6	53,8	55,9	40,0
Other transfers	7,4	5,6	7,4	8,5	8,5	6,9	7,0	7,0	6,5	6,7	9,0

Moreover, the results of the calculations are proved by the maximal figures of the tax incomes' specific weight in the total revenues of the Russian Federation Ural Federal District industrial cities budgets, achieved in 2012.

Conclusions

In the process of achieving the set aim of the investigation, implied in the improvement of existing methodological approaches to the estimation of effectiveness in the current national model of interbudget relations as a trend to enhance the tax potential of the Russian Federation industrial cities, the authors of the article arrive at the following significant results.

Following the comparative analysis of the numerous approaches to the estimation of the interbudget levelling system effectiveness on the level of the Russian Federation industrial cities financial providing, it was clarified that by present, the majority of scientific papers are based on the analysis of separate quality criteria in the distribution of the territorial formations revenue powers and, practically, there are no publications, devoted to the complex methods of research. The authors of the article put forward a way to eliminate the mentioned gap in the modern financial science through exploring and finding grounds for the complex methodological approach to the estimation of effectiveness in the current system of interbudget relations in the conditions of the Russian Federation.

The proposed total method of economical and statistical estimation of the current system, distributing transfers among the budgets of different levels as a trend to enhance the tax potential of the Russian Federation industrial cities is based on carrying out of the following stages:

- statistical investigation of the relation existence, its character and trend between the volume of interbudget transfers of different types (grants, subsidies, subventions and other transfers) and the figures of the integral indicator of the Russian Federation industrial cities tax potential by means of pointing out the factor and result markers and calculating the correlation coefficient;

- the calculation of threshold values of the interbudget transfers ratio in the total revenues of the local budgets, where there is registered the maximal increment of the integral indicator, characterizing the tax potential of the territorial formation, and also the balance is kept between the economic interests of all the government levels and the tax-payers, using the average balanced figure;

- the estimation of effectiveness in the system of interbudget relations under the conditions of the Russian Federation through clearing up the threshold values of the interbudget transfers ratio in the total revenues of the industrial cities local budgets by the current date and their comparison with the optimal figures.

The testing of the proposed criteria and of the represented approach to the estimation of effectiveness in the current national model of interbudget relations, that in a complex way takes into consideration "the interbudget transfers" and "the integral indicator of the tax potential", proved the importance of the achieved results in the process of exploring the proposals to correct the mechanism of transfer distribution, aiming at enhancing the interest of the Russian Federation industrial cities government to decrease the resource dependence from the higher level and to stimulate the social-economic development of territorial formations.

Further, the research will be continued due to the use of the approach, put forward by the authors, concerning not only the industrial cities of the Ural Federal District of the Russian Federation but also the municipal territorial formations in general.

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