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I. Procedure for Calculation of Intergovernmental Transfers Recommended by the Ministry of Finance of Ukraine: Comments and Analysis

1. Overview

The Procedure for Calculation of Intergovernmental Transfers elaborated by the Ministry of Finance of Ukraine demonstrates a significant progress on the way to a more objective and transparent budgetary process. The Procedure makes it possible to build the finance distribution process on a formalized basis rather than on negotiations between the Ministry of Finance, on the one hand, and local governments, on the other. The Procedure has the following distinguishing features:

1. The uniform formalized method is shared by all types of local budgets: those of local self-governance in cities and raions, of oblast branches of the state power, of the republican budget of the Autonomous Republic of Crimea (therefore, it is assumed that all the above governments have identical budgetary rights);
2. The amounts of financial resources remaining at the disposal of local governments are determined according to a mathematical formula;
3. The use of tax capacity estimation rather than actual tax collection data to estimate local government revenues;
4. Expenditure needs are estimated using standards based on values that reflect the realistic potential of the budgetary system;
5. For the purposes of estimation of expenditure needs on the major budgetary functions, average standards for each type of local budget are used;
6. Most expenditure standards are estimated at per consumer of public services basis.

The above features allow the central government to approach the following goals:

1. To abandon the practice of individual negotiations on the amount of financial resources to remain at the disposal of local governments;
2. To encourage local governments to collect more revenues to local budgets;

¹ This paper is written in 2000 while providing consulting services to the World Bank.

3. To promote more rational spending approaches on the part of local governments.

The Procedure represents a version of the approach known as the “negative transfer”, or “horizontal equalization” method. It is characterized by equalization of per capita budget revenues by means of direct redistribution of financial resources collected from wealthy areas to poor ones. At the same time, local taxes and fees assigned to local governments (raions and cities) are not included in redistributed funds. Per capita fiscal capacities are equalized using funds of the so-called local revenue basket that includes state taxes and fees: personal income tax, land tax, single tax on small businesses, and seven kinds of duties, penalties, fiscal sanctions and interest, as well as registration, license and patent fees. The entire amount of such taxes and fees goes to the local level according to the following proportion: 75% are assigned to city and raion governments, 25% go to oblast governments and the Autonomous Republic of Crimea while the cities of Kyiv and Sevastopol are assigned with 100%.

There are no restrictions as to the volume of “withdrawn” funds. In this connection, the sharing arrangements for the basket taxes are of no importance. Such arrangements may have a significance when a ratio is determined in which gains from greater tax efforts generated in the same jurisdiction are to be shared between oblast/republic and local governments. However, in this case also the gains attained by a government of one level will automatically go to a government of the other level.

The size of budget to be allocated to administrative-territorial units is assessed using the expenditure standards calculated from the realistic estimates of all “revenue basket” taxes assigned to the local level. For each kind of public service, a per capita expenditure standard is calculated as a function of total estimated funds that all local governments will spend on the service in question in the planned year. The spending needs of each administrative-territorial unit for rendering a specific public service are calculated by multiplying the relevant expenditure standard by the number of consumers of this service. To determine the overall spending needs of each administrative-territorial unit it is necessary to sum up its spending needs for all public services. The difference between the overall spending needs of an administrative-territorial unit (minimum necessary budget) and its tax capacity will form the amount of transfers due to it.

2. Local Budget Tax Capacity Estimation

Under the reviewed Procedure, the tax capacity is based on official information of the tax authorities relative to actual amounts of taxes collected by local governments, tax benefits, tax overpayments and arrears, cases of tax arrears restructuring and writing off. It means that the

data on the revenue capacity of a jurisdiction coincide with its maximum tax collection figures that in real life cannot be achieved. However, since for the computation purposes not the tax capacity is used but the ratio of the tax capacity of each local budget to its average figure for all local budgets, the method is quite suitable. Under such relative revenue assessment method, those governments whose tax efforts are above the average will gain (i.e. will receive more as compared with those governments that have the same collection figures but whose tax efforts are not fully realized). Therefore, those budgets that demonstrated above the average tax efforts will retain a greater amount of revenue.

Such kind of stimulation being used, it is necessary to analyze whether the local governments may have a real impact on all the parameters of the tax capacity formula, i.e. tax arrears, tax benefits and exemptions, tax restructuring and writing off. Also, to include all types of local governments into the single tax capacity estimation formula one has to be sure that the administration of the Autonomous Republic of Crimea, oblast administrations, city and raion governments have identical authority regarding the realization of the above tax efforts. Unfortunately, the formula components represent but an incomplete list of instruments that can provide additional revenues to the budget by means of influence that local governments may have on them. Thus, missing from this list are shadow economy facilities that practice tax evasion.

Another stimulation device of the Procedure is the use of average figures for three years for the tax capacity assessment. Those local governments that collect more tax revenues in the planned year as compared with the average for the last three years will benefit more.

3. Local Budget Expenditure Needs Evaluation

The diagrams (see below) of revenue distribution before and after the equalization process (those where revenues were ranked only before equalization) show a considerable number of local budgets demonstrating a significant deviation of the final revenue (or expenditure) per capita indicator as compared with the average one. This is a result of using expenditure standards which obviously take into account some other factors, apart from number of consumers of public services.

The administrative-territorial units of Ukraine are located in the same climatic zone with even transportation availability and practically the same level of consumer prices. Thus the difference in costs of public services cannot be considered a factor of local budgets deviation. We could consider the demographic and social composition of the population of an

administrative-territorial unit to be a factor that influences the needs for public services. Unfortunately, the relevant economic and social statistics data by jurisdictions are not available and the author cannot conduct a statistical analysis of the factors that have an impact on the distribution of transfers.

The Procedure provides for assessment of expenditure needs of local governments through demand-driven standards adjusted for a specific public service cost factor as compared with a certain basic cost and multiplied by the number of actual consumers of such service in the base years (possibly projected for the planned year). The resulting expenditure standard represents an average per consumer expenditure amount estimated for each type of local governments.

Regrettably, the details of expenditure standards computation process is not always provided in the Procedure. Judging by the summed up spending needs of all local budgets that almost coincide with the assessed tax capacity for all local budgets one may conclude that the standards computation process is bound somehow to the planned revenues.

The total sum of expenditure needs (not taking into account the needs for social programs covered by earmarked subventions) is 24 2058.4 thou. Gr more than the total sum of tax capacity. This difference constitutes 2.7% of total budget expenditures and has to be covered by sources other than taxes allocated to the local level.

The expenditure needs formulas indirectly consider the social infrastructure formed in the jurisdictions and the actual number of consumers of services provided by the relevant public institutions. For a number of services the consideration is taken not of the whole of the population in the jurisdiction that might claim a certain service but the actual number of its consumers that have already obtained an access to it. Therefore, the total budget expenditure needs (and consequently the amount of ultimate revenue) per capita will be greater in an area with better infrastructure while areas with no infrastructure will be underpaid as far as provision of public services is concerned; accordingly, their population has no chances to receive the relevant services in the future. Obviously, the Procedure under review does not provide the population with equal access opportunities regarding public services.

The method of transfer distribution in Ukraine reflects a transitory nature of its public finance. On the one hand, in compliance with the unitary nature of public finance, funds for fulfilling the central government's expenditure responsibilities should be provided in accordance with the standards calculated by it and the fixed budget of expenditures for the maintenance of relevant institutions should be accurately executed. The allocated to the local level financial

funds include State taxes collected by the central tax authorities. Under such system, lower level governments are not responsible either for tax compliance or for expenditure rationalizing. On the other hand, the Procedure provides for better terms for those local governments that demonstrate higher collection efforts and are able to spend budget funds more efficiently. This is achieved by the use of tax capacity indicator and average expenditure norms to determine the size of a transfer for all local budgets.

The Procedure stipulates for a single mechanism to distribute financial resources both to the oblast governments (that in fact are the center's territorial branches) and to the elected local governments. At the same time these two types of governments possess different degrees of freedom to make budget decisions. While the oblast authorities have to be guided by the central government, local governments should be able to make decisions on budget spending at their own discretion. From the other perspective if the Procedure provides for a mechanism for distribution of resources to finance delegated responsibilities then, as far as local governments are concerned, this should be accompanied by **earmarked** funds to be remitted for their full execution.

4. Subventions for Earmarked Social Programs

Apart from the funds transferred to local governments under the budget equalization method, the latter also receive subventions for social support programs. Subventions are distributed from the central budget in proportion to the following criteria:

(a) population eligible for social allowances or benefits (subventions on benefits for war and labor veterans, children allowances, invalid allowances);

(b) estimated "necessity" to pay certain kinds of subventions (subventions on accommodation subsidies, social allowances to low-income families);

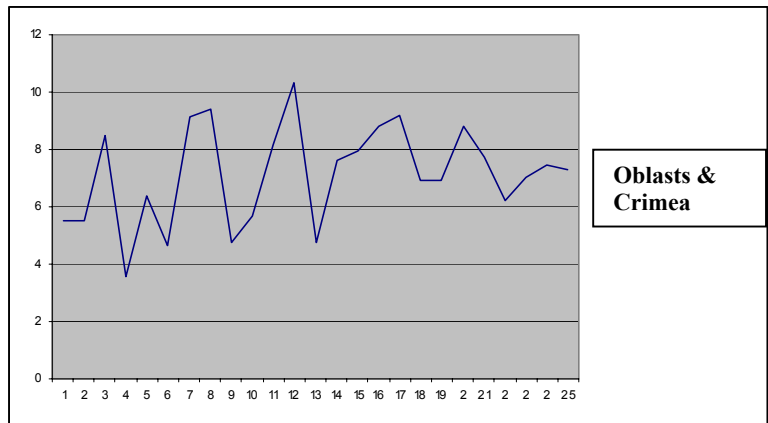
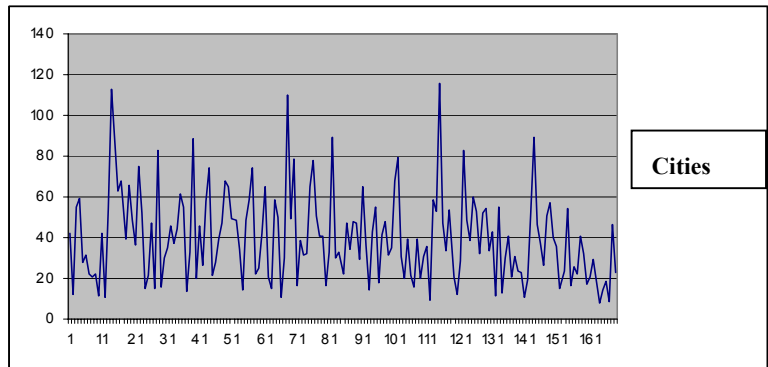
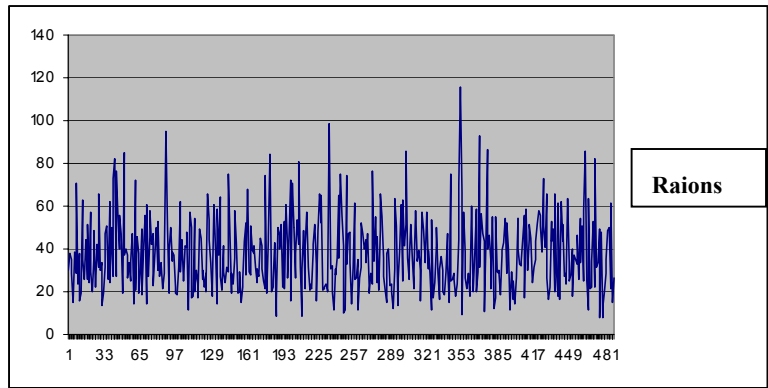
(c) base year accruals for payments of particular benefits (subventions on benefits to Stalin prisoners).

While the use of criterion (a) is well-founded, objective and fair, criteria (b) and (c) are based on some "necessity" whose computation is not provided in the Procedure, or on actual amounts (though accrued, and not actually executed amounts).

A comparison of per capita amounts of subventions provided to each type of local governments demonstrates considerable divergences. Obviously, they cannot be explained by uneven distribution of population eligible for social support from the budget. To some extent,

the divergences might be caused by the difference in accommodation allowances that should be lower in those areas where housing services cost less (owing to the use of different kinds of fuel). Still it is not clear whether the administrative-territorial units of Ukraine differ that much regarding these costs.

Table 1. Per capita subventions

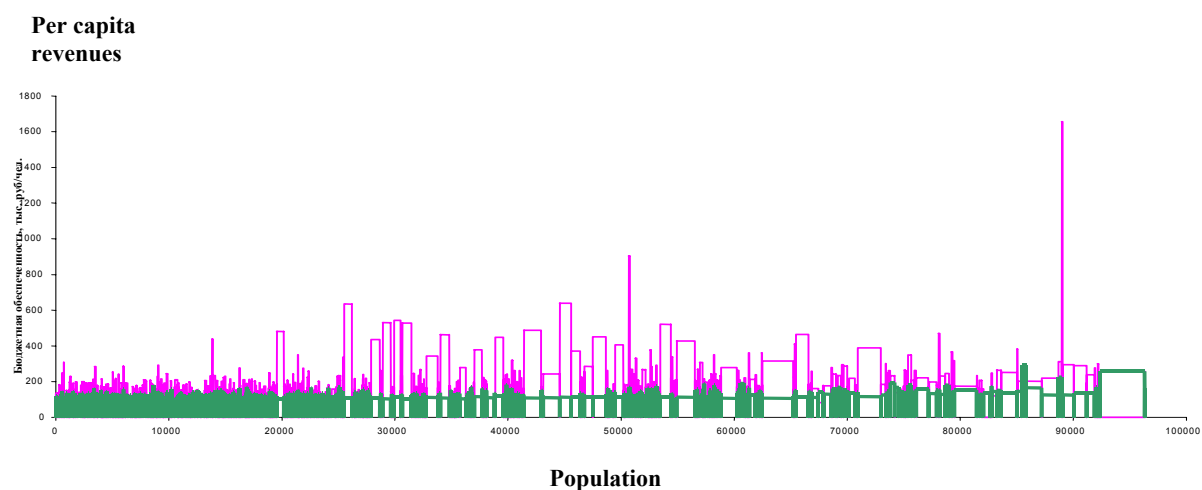


5. Share of Funds Distributed According to Formula in Total Amount of Revenues Allocated to Local Budgets

The total amount of funds to be distributed in 2001 in accordance with the Procedure (10,946, 041.8 thou. Gr) is more than twice less (even in current prices) than the amount spent by the local budgets in 1999 (22,847,131.3 thou. Gr, Kyiv and Sevastopol budgets not included). The Procedure does not give a clue how the expenditures outside it are going to be financed. If the Procedure provides for only some part of financing while the rest is going to be distributed in the old way on the individual basis, all the Procedure's advantages become invalidated.

As is evident from the table below, should all the funds allocated to the local level be provided in accordance with the Procedure, per capita revenues (and, accordingly, per capita expenditures) would be much more equalized. But at the same time the effect of the equalization efforts might be negatively compensated when the rest of funds are transferred.

Table 2. Local Budget Executions in 1999 as Compared with Figures Calculated in Accordance with MinFin Procedure for 2001 (Including Expenditures on Local Spending Responsibilities)



* Data on budget execution of the cities of Kyiv and Sevastopol is not available.

6. Financial Support Distributed in Accordance with the MinFin Procedure: an Analysis of Results

A comparison of the data before and after transfer distribution to Ukrainian local budgets suggests the following conclusions:

1. Average per capita revenue before transfers to local budgets are:

in raions – min 12.3 thou. Gr (Lyubeshivsky raion, Volynsk Oblast),

max 175.3 thou. Gr (Obukhivsky raion, Kyiv Oblast)

14 times difference;

in cities – min 47.9 thou. Gr (Bolekhiv, Ivano-Frankovsk Oblast),

max 603.2 thou. Gr (Yuzhne, Odessa Oblast),

12.6 times difference;

in oblasts and the Autonomous Republic of Crimea –

min 19.6 thou. Gr (Ternopol Oblast),

max 60.3 thou. Gr (Dnepropetrovsk Oblast),

3.1. times difference.

2. Following the equalization carried out by allocating/withdrawing a transfer the resulting per capita average revenues (expenditures for delegated spending responsibilities not including social programs) of local budgets are as follows:

in raions – min 78.3 thou. Gr (Konotopsky raion, Sumy Oblast),

max 306.3 thou. Gr (Velikobelozersky raion, Zaporozhsk Oblast),

3.9 times difference;

in cities – min 63.6 thou. Gr (Khust, Zakarpatskaya Oblast),

max 225 thou. Gr (Krasny Liman, Donetsk Oblast),

3.5 times difference;

in oblasts and the Autonomous Republic of Crimea –

min 43 thou. Gr (Lvov Oblast),

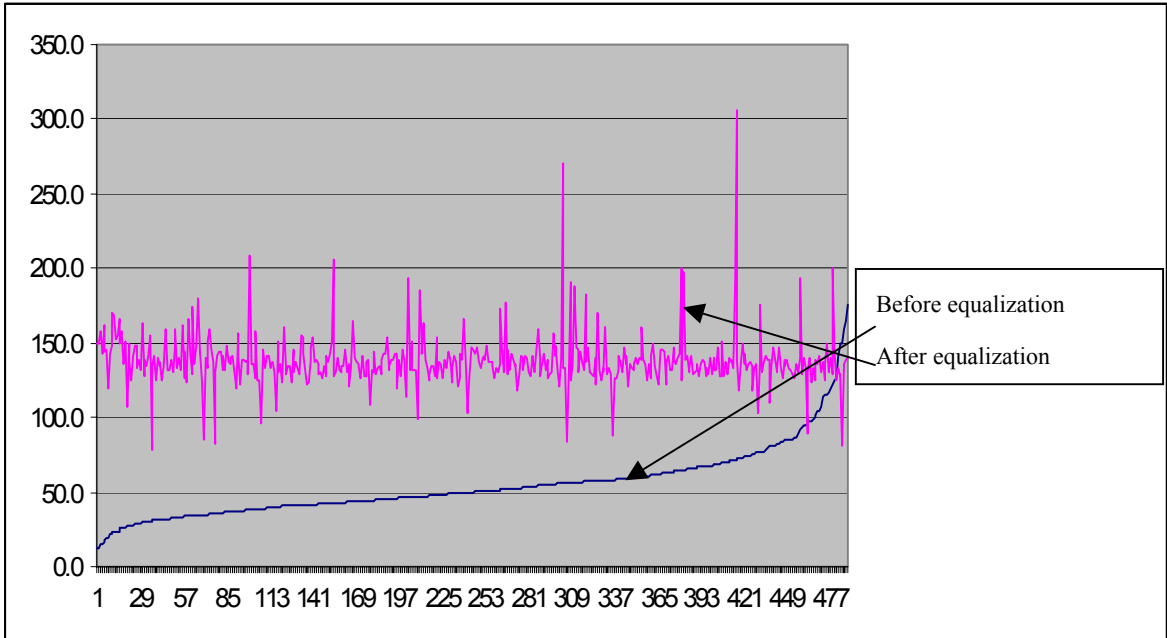
max 71.5 thou. Gr (Zakarpatskaya Oblast)

1.7 times difference.

3. Following the equalization efforts, the distribution of revenues became less uneven (measured by Gini Coefficient), the cut being:
 - in raions – from 0.22 to 0.08;
 - in cities – from 0.29 to 0.08;
 - in oblasts and the Autonomous Republic of Crimea –
from 0.18 to 0.05.
4. Out of 127 donors there are 116 city donors (Kyiv and Sevastopol included), 8 raion donors, 3 oblast donors. Accordingly, 65% of all cities are donors while 98.4% of raions and 88% of oblast budgets are recipients.
5. The analysis has demonstrated that, for raion and oblast data, there is practically no correlation between the amount of collected taxes and financial resources retained at the disposal of local budgets; as far as city budgets are concerned, the correlation is positive but very small (0.11).

Table 3. Per capita revenues of raion budgets

1. Ranking by revenues only before equalization



2. Ranking by revenues both before and after equalization

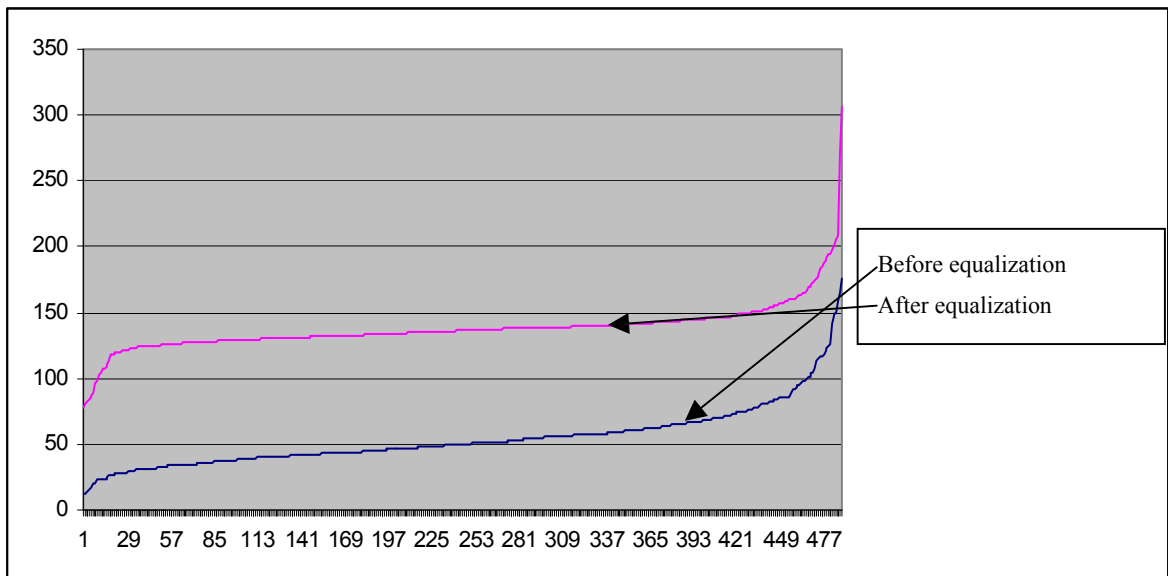
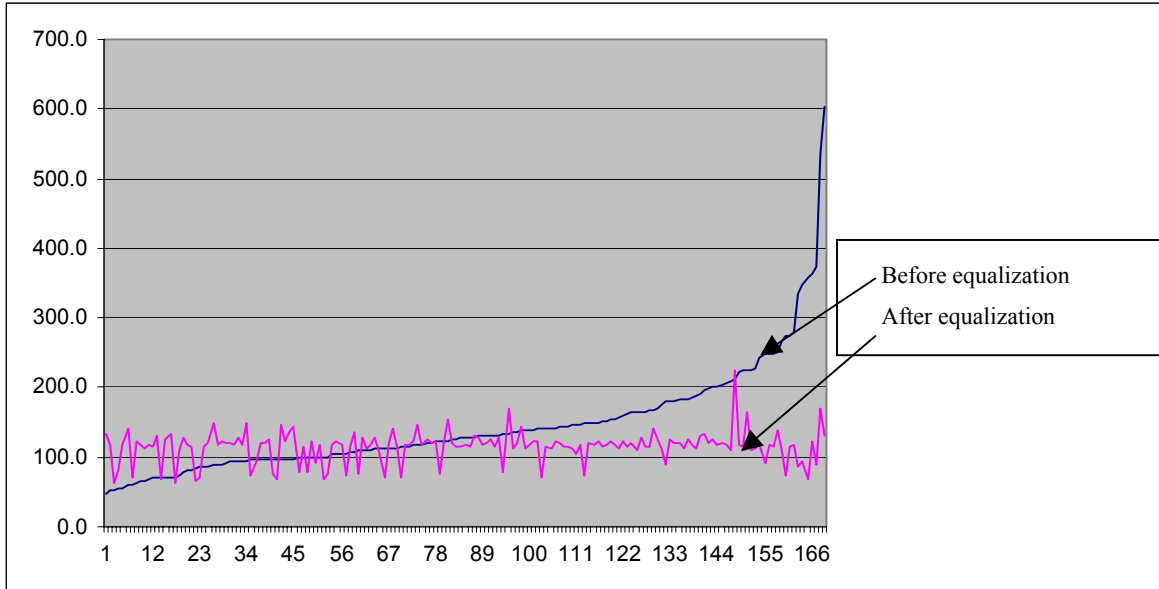


Table 4. Per capita revenues of city budgets (Kyiv and Sevastopol included)

1. Ranking by revenues only before equalization



2. Ranking by revenues both before and after equalization

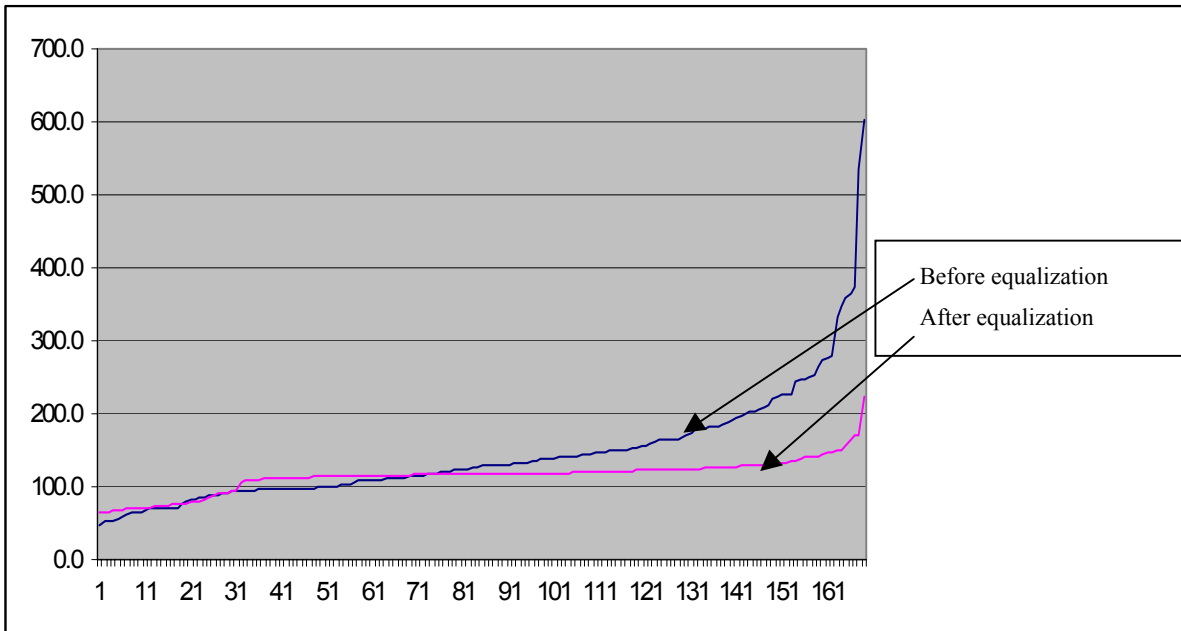
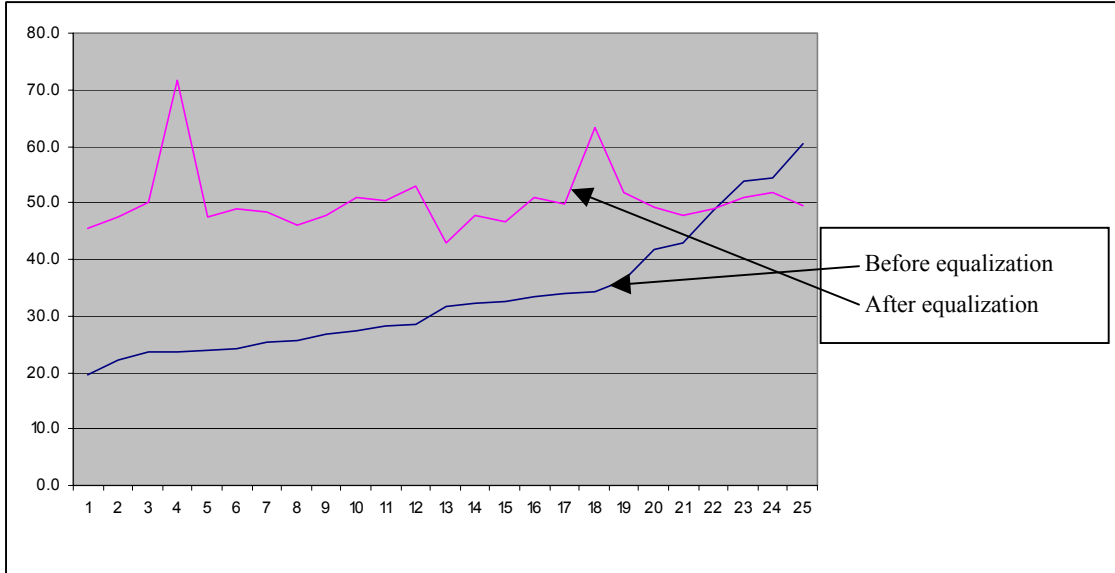
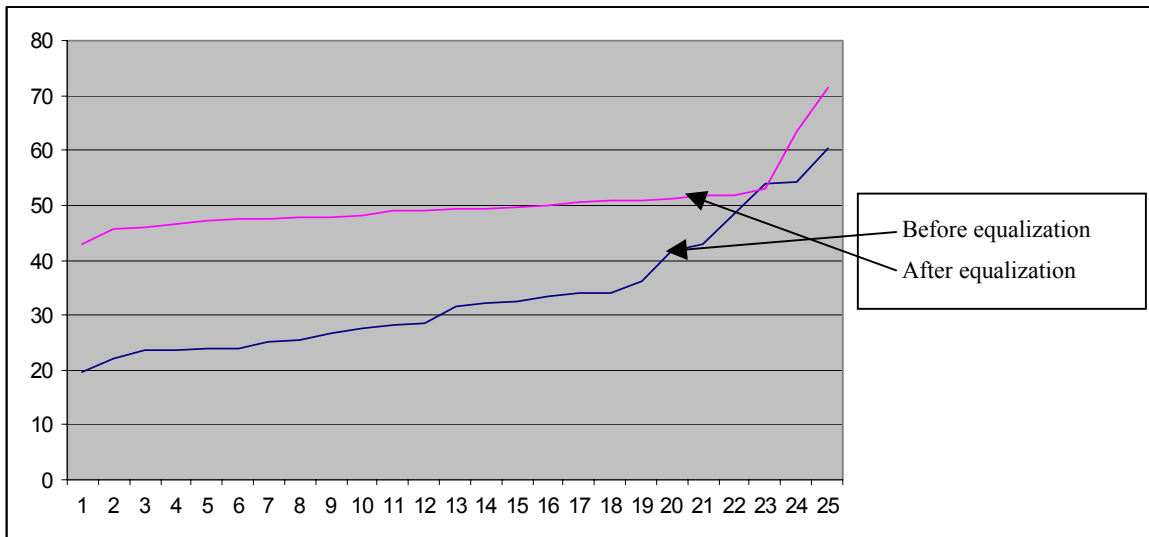


Table 5. Per capita revenues of oblast budgets and the budget of the Autonomous Republic of Crimea

1. Ranking by revenues only before equalization



2. Ranking by revenues both before and after equalization



II. Recommendations on Better Formalized Methods to Be Used to Distribute Financial Resources across Local Budgets

1. Recommendations on Tax Capacity Estimation Improving

The tax capacity estimation method suggested by the Ministry of Finance cannot guarantee taking into consideration all the factors influencing tax efforts of local governments. Also, it does not take into account the shadow economy which also belongs to tax revenue potentials. Therefore, for tax capacity estimation purposes it is more preferable to compare local budget tax bases. Such comparison can be achieved using the following methods:

1. Value Added Based Tax Capacity Estimation

Data on value added in each jurisdiction can be estimated by statistical agencies.

Under this method, the general formula for tax capacity estimation will be as follows:

$$D_i = \frac{D}{B} \times B_i \times k, \text{ where}$$

D_i – tax capacity of i -th local budget,

D – total tax revenues of all local budgets,

B_i – tax base of i -th local budget calculated as value added in the relevant jurisdiction (for the purposes of oblast budgets and the budget of the Autonomous Republic of Crimea, such tax base includes all tax bases of cities and raions in their respective jurisdiction),

B – total tax base of all local budgets calculated as the sum of value added in all jurisdictions of Ukraine,

$k = 1$ – for Kyiv and Sevastopol budgets,

$k = 0,25$ – for oblast budgets,

$k = 0,75$ – for city and raion budgets.

Here the ratio $\frac{D}{B}$ is the average for Ukraine tax rate aggregated for the “local tax basket” in relation to the entire tax base.

In order to estimate the tax capacity in the planned year by this formula, one of the following options can be used:

(a) If we assume that the economic situation in the country is unstable and the tax base of both individual local budgets and the national budget as a whole varies significantly from

year to year, it would be recommended to project not only total tax revenues for the planned year but the tax base as well (both for each government and the country as a whole).

(b) If shares of individual local budgets in the aggregated tax base vary but insignificantly (and this is probably the case) then tax bases can be evaluated on the basis of the last fiscal year and in this case only total tax revenues should be projected.

2. By Sector Tax Capacity Estimation

According to this method, the tax capacity is estimated as the sum of sector tax capacities. This approach can be used in case information on tax collections and value added for same sectors of economy is available. For instance, one may take industry, construction, agriculture and market services. In this case the tax capacity formula will assume the following form:

$$D_i = \frac{D^I}{B^I} \times B_i^I \times k + \frac{D^C}{B^C} \times B_i^C \times k + \frac{D^A}{B^A} \times B_i^A \times k + \frac{D^S}{B^S} \times B_i^S \times k$$

where *I*, *C*, *A*, *S* accordingly refer tax revenues and tax bases to industry, construction, agriculture and market services.

3. Representative Tax System Method

Data to be used by this method should be provided by tax authorities (from aggregate taxpayer tax record forms) and supplemented by statistical agencies (estimation of the shadow economy, first of all in retail sales).

This method consists in estimating the tax capacity as the sum of tax capacities by individual taxes. It can be used when information on collections of individual taxes comprising the local tax basket and the volume of their respective tax bases is available. The tax capacity formula will be as follows:

$$D_i = \frac{D^{PIT}}{B^{PIT}} \times B_i^{PIT} \times k + \frac{D^{LT}}{B^{LT}} \times B_i^{LT} \times k + \frac{D^F}{B^F} \times B_i^F \times k + \frac{D^{SBT}}{B^{SBT}} \times B_i^{SBT} \times k + D_i^D$$

where

PIT refers to tax revenues and tax base of the personal income tax,

LT refers to tax revenues and tax base of the land tax,

F refers to tax revenues and tax base of the registration and license fees,

SBT refers to tax revenues and tax base of the single small business tax,

D_i^D - revenue forecast from receipts whose tax base cannot be estimated (e.g., state duty, penalties, financial sanctions, interest etc.).

Depending on the data available, one may use various methods to evaluate tax base of individual taxes.

Generally, *personal income tax* base is determined as the sum total of gross aggregate income of individuals. The relevant parameter, i.e. the sum total of gross aggregate income of individuals, should be available from local tax authorities, specifically in the consolidated report on tax bases by major types of taxes in the base period.

The land tax base is estimated in accordance with the specific legislation.

To estimate the bases of the *single small business tax and registration and license fees* collected by local authorities, it is recommended to use the amount of retail sales (including the expert estimate of retail sales in the shadow economy), public catering sales (including the expert estimate of the shadow economy) and sales of market services to households through all channels. The necessary data should be provided by the local statistical agencies.

It is impossible to estimate tax bases for a number of budget revenues included into the revenue basket of local budgets, i.e. for state duties, penalties, tax sanctions and interest. In this case it is recommended to plan the relevant revenues on the incremental basis, which means that figures of the base year are taken and then adjusted for inflation rate. Though simplified, this approach will have no negative impact on tax efforts of local governments since the above mentioned revenues are not influenced by these efforts. On the contrary, to encourage local governments to increase these categories of revenues might lead to abuse of power and to unjustified collection of penalties and sanctions.

In case data on tax base itself is not available or difficult to obtain, it can be substituted by indicators that provide indirect information on the tax base. In this case it would be advisable to use the linear regression method to estimate a tax capacity.

4. Regression Method

It should be pointed out at the beginning that this is the least labor and time consuming method, which, as a rule, produces the most reliable results. To apply it, it is necessary to chose

parameters that have the most effect on tax revenue collections to local budgets, i.e. that reflect it indirectly. Such parameters might include the following:

- industrial and agricultural output in a jurisdiction,
- total amount of wages paid in a jurisdiction,
- profits of profitable taxpayers in a jurisdiction,
- electric power consumption in a jurisdiction etc.

The regression method makes it possible to take into account simultaneously the influence of several factors and determine the degree of such influence for each parameter. The formula of tax capacity estimation by the linear regression method looks as follows:

$$D_i = k(a + b \cdot B_i^1 + c \cdot B_i^2 + d \cdot B_i^3 + \dots)$$

where

B_i^1, B_i^2, \dots – values of parameters characterizing indirectly a tax base; for oblast budgets, each parameter is calculated as the sum of the relevant parameters for all raion jurisdictions of such an oblast;

a, b, c, d, \dots – coefficients indicating the degree of impact of a parameter on tax revenues; they are determined by the linear regression method.

Let us consider an example of a regression formula for the city of N:

$$D_N = 0.75 \cdot (136 + 0.22 \cdot I_N + 0.13 \cdot W_N),$$

where

I_N – projection of industrial output in the planned year for the city of N;

W_N – projection of wages to be paid in the city of N in the planned year;

0.75 – share of the revenue basket due to cities,

136 – constant term of the formula (Gr),

0.22 – coefficient for the industrial output parameter indicating the degree of its impact on the amount of tax revenues;

0.13 – coefficient for the wages fund parameter indicating the degree of its impact on the amount of tax revenues.

2. Tax Capacity Relative Index

For the sake of stability of equalization transfer system so that local governments could project their prospective revenues, a tax capacity relative index can be determined and fixed for several years. The tax capacity index may be estimated using the data for a base year and will show the relative capacity of local budgets. The tax capacity index for i -th administrative-territorial unit is calculated by the following formula:

$$I_i^D = \frac{D_i^n}{D^n}, \text{ where } n \text{ indicates the base year } n.$$

To calculate the tax capacity index in the year following the base one, it would be enough to project aggregate revenues for local governments for that year. Then the tax capacity of each administrative-territorial unit will be determined as follows:

$$D_i^{n+1} = D^{n+1} \times I_i^D$$

The method can be used in case different parts of the country show an even economic growth and shares of local governments in the consolidated tax base stay stable over time.

3. Further Improvement of the Expenditure Needs Assessment Method

Apart from the above, the Procedure recommended by the Ministry of Finance has some other weaknesses:

education: no explanation has been provided for expenditure standards as well as adjustment coefficients for expenditures on education sub-items;

culture: no explanation for adjustment coefficients for expenditures in individual oblasts and the cities of Kyiv and Sevastopol;

healthcare at the city and raion level: the estimation of expenditure needs does not include the population of cities and raions where the network of relevant public institutions is absent while the so-called readdressed expenditures, e.g. financial resources that are transferred from some local budget to others for healthcare services of residents of other jurisdiction, are taken into account. These two expenditure items should be set off against each other. Thus the formula becomes more transparent and takes into account only per capita healthcare expenditure needs with no regard to the medical institution network. If the practice of readdressed expenditures does take place in some jurisdictions it should be disseminated nationwide.

As far as such expenditure items as social protection and social support, culture and arts, physical culture and sports are concerned, an objective and easily understood approach is used in

the Procedure. The only shortcoming is the lack of consistency while using the formula design for expenditure needs computation. We would recommend using the same design of a formula for all expenditures:

$$P_i^J = \frac{P^J}{N} \times N_i \times k^1 \times k^2,$$

where

P_i^J - expenditures for Item J for i -th administrative-territorial unit,

P^J - expenditures for Item J for all of Ukraine (or for all administrative-territorial units of a specific type),

N_i - population (or consumers of this kind of budget expenditures) in i -th administrative-territorial unit ,

N - population (or consumers of this kind of budget expenditures) in all of Ukraine,

k^1 – sharing coefficient (that signifies the share in the aggregate expenditures of oblast budgets or the budget of the Autonomous Republic of Crimea and cities and raions),

k^2 – adjustment factor (reflecting higher/lower costs of public services in the given jurisdiction).

As far as expenditures on education are concerned, it is recommended to abandon adjustment coefficients that denote relative costs for various education expenditure sub-items and to calculate per consumer expenditure needs for each sub-item independently using the consolidated expenditures for such sub-item in all of Ukraine (or in all administrative-territorial units of the given type) divided by relevant number of consumers.

4. Consolidated Budget Expenditure Index

To understand better the results of equalization process and to fix the relative amounts of expenditures in various administrative-territorial units for using them in the following years, it is recommended to introduce the notion of a *consolidated budget expenditure index*. This index is calculated as the ratio of per capita expenditures in each administrative-territorial unit to the average per capita expenditures in all administrative-territorial units of Ukraine:

$$I_i^P = \frac{P_i}{N_i} \div \frac{P}{N}$$

where

I_i^P – budget expenditure index for i -th administrative-territorial unit,

P_i – aggregate expenditures of i -th administrative-territorial unit,

P – consolidated expenditures in all administrative-territorial units of Ukraine,

N_i – population of i -th administrative-territorial unit,

N – population in all administrative-territorial units of Ukraine (this will be equal to the population of all of Ukraine plus population of all oblasts and the Autonomous Republic of Crimea).

Therefore, the *budget expenditure index* indicates how many times more expensive/cheaper are the actually provided per capita public services in i -th administrative-territorial unit as compared with the national average. The reasons for such differences in per capita costs of public services are the factors that are present in the formula used to calculate expenditure needs: demographic composition of population, composition of public service consumers, composition of the social infrastructure etc. Thus, in an administrative-territorial unit with more children of school age, pensioners and invalids, the costs of per capita public servicing will be greater. If expenditure needs are calculated on the basis of available social infrastructure (areas with hospitals and social centers are recognized to have greater expenditure needs) then the cost of servicing will be higher in jurisdictions with greater per capita number of social facilities.

If we know (or if we calculate by an indirect method) the budget expenditure index, i.e. the relative cost of public servicing in various administrative-territorial units, we can calculate the amount of a transfer without direct calculation of expenditure needs. In this case the transfer formula is as follows:

$$T_i = \left(\frac{D}{N} - \frac{D_i}{N_i \times I_i^P} \right) \times N_i \times I_i^P$$

Let us prove that the amount of a transfer calculated by the formula suggested by the Ministry of Finance and by our formula will coincide:

$$\left(\frac{D}{N} - \frac{D_i}{N_i \times I_i^P} \right) \times N_i \times I_i^P = P_i - D_i$$

Indeed, assuming that

$$(1) P = \sum_i P_i = \sum_i D_i = D \quad \text{and} \quad (2) I_i^P = \frac{P_i}{N_i} \div \frac{P}{N}$$

we come up with

$$\left(\frac{D}{N} - \frac{D_i}{N_i \times I_i^P} \right) \times N_i \times I_i^P = \frac{P}{N} \times N_i \times I_i^P - D_i = \frac{P}{N} \times N_i \times \frac{P_i}{N_i} \times \frac{N}{P} - D_i = P_i - D_i ,$$

and the proof is complete.

One of the advantages of using the budget expenditure index for calculating the sizes of transfers is that it can be fixed for several years. Thus, expenditure needs in the base year can be calculated in detail on the demand-driven basis (the way it is suggested by the Ministry of Finance) and then, relative to average ratios for each local government will represent a budget expenditure index to be fixed for several years. This is quite admissible if no significant changes are expected in the distribution of spending responsibilities across local budgets as well as between central and local budgets. It is also assumed that the relative demographic composition and the relative cost of service provision in jurisdictions keep constant. If social infrastructure facilities are to be taken into consideration in estimations of expenditure needs then the relevant changes in such facilities supply should be monitored.

Another benefit in connection with the budget expenditure index is that it can be built on the basis of indirect evaluations that compare fair differences among administrative-territorial units.

To measure and take into account such differences among administrative-territorial units it is recommended to use the Method of **Representative Expenditure System**.

This approach to measuring expenditure needs of administrative-territorial units is a mirror reflection of the Representative Tax System Method used for tax capacity estimation. The latter method presupposes that the sum of own tax capacities of administrative-territorial units in connection with revenues allocated to the local level coincides with the projection of local budget revenues from such revenue sources; the tax capacity is distributed across administrative-territorial units not according to the actual amount of taxes collected in the base year but in accordance with the tax base distribution.

Under the Representative Expenditure System Method it is assumed that the sum of expenditure needs of all administrative-territorial units coincides with the estimated sum of administrative-territorial units' expenditures on execution of delegated spending responsibilities

in the planned year; however, these spending responsibilities are distributed not according to the actual amount of spending of each administrative-territorial unit in the base year but according to the distribution of demand for public services across administrative-territorial units.

Under the Representative Tax System Method, the ratio of the total amount of revenues from each tax source to the aggregate tax base of such tax in all administrative-territorial units gives the average effective tax rate (tax resources withdrawal coefficient).

Under the Representative Expenditure System, division of the total amount of expenditures on provision of a specific public service in all administrative-territorial units by the number of recipients in all administrative-territorial units produces the per capita expenditure standard for such service provision.

Given below are some indicators that can be used to measure the demand for public services included into the Representative Expenditure System and formulas for computation of indices for line budget expenditure.

School Education	
<p><u>Demand</u>: number of children under 17</p>	<p><u>Budget Expenditure Index (BEI)</u>:</p> $Edu_i = \frac{Ch_i}{P_i} \div \frac{Ch}{P},$ <p>Edu_i – BEI for school education for i-th administrative-territorial unit,</p> <p>P_i – population of i-th administrative-territorial unit,</p> <p>Ch_i – number of children under 17 in i-th administrative-territorial unit; variables without subscripts refer to all of Ukraine.</p>
Healthcare	
<p><u>Demand</u>: weighted sum of three indicators: total population of i-th administrative-territorial unit, number of children under 17, number of pensioners. The weights</p>	<p><u>BEI</u>:</p> $Hlth_i = \frac{P_i + k_1 * Gh_i + k_2 * Pens_i}{P_i} \div \frac{P + k_1 * Ch + k_2 * Pens}{P},$ <p>where:</p>

<p>of these items should show how many times the demand for healthcare of the relevant population group is higher than the demand of a statistically average resident of the jurisdiction. They can be computed on the basis of request for healthcare statistics or with the help of experts.</p>	<p>$Hlth_i$ – number of conventional consumers of healthcare services in i-th administrative-territorial unit,</p> <p>P_i – population of i-th administrative-territorial unit,</p> <p>Ch_i – number of children of up to 17 in i-th administrative-territorial unit=,</p> <p>$Pens_i$ – number of pensioners in i-th administrative-territorial unit.</p> <p>Variables without subscripts refer to all of Ukraine.</p>
<p>Social Programs</p>	
<p>Demand: size of population with incomes below subsistence level.</p>	<p><u>BEI</u>:</p> $Soc_i = \frac{B_i}{P_i} \div \frac{B}{P},$ <p>Soc_i – IBE for social security services in i-th administrative-territorial unit,</p> <p>P_i – population of i-th administrative-territorial unit,</p> <p>B_i – size of population with incomes below subsistence level in i-th administrative-territorial unit; variables without subscripts refer to all of Ukraine.</p>
<p>Other Public Services</p>	
<p><u>Demand</u>: this category includes all services that are equally demanded by all population categories. In this case the demand indicator is the size of population.</p>	<p><u>BEI</u> for any service equally demanded by all population groups and categories is equal to 1.</p>

If information on consumers from the category of Other Public Services is available, some other categories of services can be specified that are targeted for specific consumers rather than all of them.

The single Budget Expenditure Index is the sum of indices for all expenditure items taken with weights that are equal to shares of expenditures on such items in the total amount of expenditures of local budgets. Thus, if the Representative Expenditure System includes school education, healthcare, social support services and other public services, the single BEI will be computed by the following formula:

$$BEI_i = Edu_i \frac{Edu}{E} + Hlth_i \frac{Hlth}{E} + Soc_i \frac{Soc}{E} + \frac{Other}{E}, \text{ where:}$$

BEI – single Budget Expenditure Index,

E – sum total of all expenditures of local budgets,

Edu – sum total of local budgets' expenditures on education,

Hlth – sum total of local budgets' expenditures on healthcare,

Soc – sum total of local budgets' expenditures on social programs,

Other – sum total of local budgets' expenditures on other public services.

The above examples of indicators that reflect demand for public services did not use adjustment factors which reflect transport availability, duration of heating season, share of urban population etc. When such data are available, relevant adjustment factors can be calculated.

5. Incentives for Governments of Administrative-Territorial Units to Increase Tax Collections

The Procedure for Calculation of Intergovernmental Transfers drafted by the Ministry of Finance of Ukraine provides for encouragement of collections of local taxes that are not involved in the equalization process as well as encouragement of tax efforts on taxes comprising the so-called revenue basket. Apart from that, it is recommended to allocate funds from the State budget to stimulate those administrative-territorial units that had positive average income growth during the previous 3 years.

We can recommend some more alternative methods for local governments aimed at achieving higher tax efforts and developing tax bases in their respective jurisdictions.

Method I. Equalization procedure may cover e.g. 80 or 90%, rather than 100% of revenues allocated to the local level depending on the political judgement of the center based on its decision regarding the minimum level of per capita fiscal capacity guaranteed to local governments. In this case administrative-territorial units having higher than national average fiscal capacity (or guaranteed minimum of fiscal capacity) will retain at their disposal the appropriate share of tax revenues (respectively 20 or 10%) in addition to the minimum, i.e. the negative transfer will comprise 80 or 90% and not 100% of the gap. This will provide an incentive to further develop the tax base.

Method II. Local governments will be rewarded for their contribution to the consolidated budget of the local level. In this case it is also recommended to use for equalization purposes only 80 or 90% of revenues allocated to the local level and to spend the remaining part in proportion to the input of each administrative-territorial unit into the aggregate revenues of the local level regarding allocated taxes. Thus, local governments will be interested in declaring their tax revenues since the more their input into the aggregate revenue of the local level, the greater the reward will be. And vice versa, tax avoidance or insufficient collection of taxes will result in revenue losses.