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How changing of different factors impacts the quantity of NGOs incomes in Ukraine

Abstract

The aim of the study is to identify the most important factors that influence the funding of Ukrainian NGOs and to determine how managing the changes in these factors can increase the income of NGOs.

The topicality of the research is stipulated by the unsatisfactory state of Ukrainian NGOs and the lack of similar studies in Ukraine. The research was conducted based on the data on the income of Ukrainian NGOs from 2006 to 2013, as well as statistics on macroeconomic indices of Ukraine over the same period.

The article provides the research of the impact of indices quantitatively characterizing their activities and indices of GDP according to distribution method on the volume of funding of Ukrainian public organizations.

The authors have revealed that such indices as the number of registered members, the number of companies, institutions and organizations founded and created by the associations of citizens, compensation for hired employees; gross profit and mixed income have the greatest impact on funding.

The authors have substantiated that the successful management of these parameters can significantly affect the funding of Ukrainian NGOs: the increase of the "Compensation of employees" parameter and the increase in "Profit and mixed income", which is one of the priorities of the state, can lead to an almost proportional increase in the income of Ukrainian NGOs. The same result can be achieved by controlling "Number of registered members" parameter. The "Number of companies, institutions and organizations founded and created by the associations of citizens" parameter has the opposite effect on the income of Ukrainian NGOs.

Keywords: NGOs, NGOs incomes, scenario approach, factor analysis.
JEL Classification: C61, H41.

Introduction

The study of peculiarities of the funding of Ukrainian NGOs indicates that its current system is not perfect and cannot provide high-quality and effective services of the NGOs to the population according to their statutory documents. It is therefore necessary to consider some alternative and additional methods of providing funding for the NGOs, especially under the modern circumstances.

Econometric methods and models occupy a special place in the analysis of social and economic phenomena and processes using economic and mathematical modeling. Using econometric methods allows to identify and describe the relations between the studied parameters and factors that affect them. The study of relations between indices of NGOs funding and the factors influencing their forming is important, because it provides the opportunity for better understanding the complex mechanism of relation of cause and effect between them. Nowadays, objective dependencies that exist between the indices of NGOs funding and the factors influencing them are mostly described verbally. In addition, the more important is the quantitative measurement of the relations of cause and effect inherent to random processes.

1. Literature review

Numerous scientific works of Ukrainian and foreign scientists, including researchers note the work such as Babeshko, L. (Babeshko, 2006), Borodych, S. (Borodych, 2001), Grygorkiv, V. (Grygorkiv, 2009), were devoted to the study of economic and mathematical relations and dependencies, but these works did not concern the activities of NGOs and their incomes. While the research of the authors such as Kovalenro, V. and Yuldashev, O. (Kovalenro, Yuldashev, 2007), Rusyn, D. (Rusyn, 2014), Vasylenko, L., Zelinskiy, S. (Vasylenko, Zelinkiy, 2002), Vinnikov, O., Krasnosilska, A., and Latsyba, M. (Vinnikov, Krasnosilska, Latsyba, 2012; Vinnikov, 2011) touched upon the problems of financing and development of Ukrainian NGOs. However, the scientists mostly researched the problems of state financing of Ukrainian NGOs, the dependency on various factors of which was described verbally, but was not confirmed mathematically. Therefore, despite the significant contribution of these scientists in economic science and practice, the applied research of the factors affecting the amounts of incomes of NGOs from all sources and the ways to maximize these incomes through control of the most important of them has not been carried out yet.

2. Methodology

2.1. InfoBase. To carry out the research we used official statistics of the State Statistics Service of Ukraine on:

♦ funding of Ukrainian NGOs in general and from individual sources (incomes from the state budget; incomes from membership fees, proceeds from the charity of legal entities, citizens and non-residents; income from institutions, companies and organizations founded and created by associations of citizens to achieve their statutory objectives; passive income);

♦ the values of the components of GDP in Ukraine (according to distribution method), namely the compensation of employees, taxes excluding production and import subsidies; gross profit and mixed income;

♦ quantitative indices of NGOs performance: the number of NGOs, the number of registered members, the number of companies, institutions, organizations founded and created by the NGOs, the number of events held, the number of group members (companies, institutions, organizations), the number of official employees.

All processed statistical data were taken for the period from 2006 to 2013.

2.2. Research methods. To solve the tasks of our thesis we used a set of general and specific research methods, including correlation and regression analysis and disperse analysis (in identifying the most significant factors affecting the condition and dynamics of funding of NGOs); the "what if" method (script manager) (to determine the possibilities of state management of the specific factors that have impact on the dynamics and funding of Ukrainian NGOs, in order to maximize it) etc.

3. Results and discussions

3.1. The impact of changes in GDP indices according to the distributive method on incomes of Ukrainian NGOs. For a comprehensive analysis of the funding of NGOs, using correlation and regression analysis, we studied the peculiarities of influence of the GDP components (according to distribution method), such as: compensation of employees, taxes excluding production and import subsidies, gross profit and mixed income, and quantitative indices of the NGOs activities on their funding [1, 2, 3].

Correlation and regression analysis thoroughly examines the correlation between the studied economic indices, in particular, for this purpose we used the construction of regression equations and made prediction based on them, measured the closeness and direction of the relation, assessed the reliability of the constructed regression models and identified possible errors in assessing the parameters of regression equations, as well as in the calculation of indices of closeness of the relation. To solve these tasks, different methods and indices, which are based on mathematical probability estimates, were used.

First of all, we determined the extent of distress correlation between the funding of NGOs and the GDP components (according to distribution method) [6-13]. To do this, we used the correlation matrix which is an important characteristic in case of multiple correlation analysis. Correlation matrix is matrix K pair correlation coefficients

$$\bar{K} = \begin{pmatrix} 1 & \bar{\rho}_{YX_1} & ... & \bar{\rho}_{YX_m} \\ \bar{\rho}_{X_1Y} & 1 & ... & \bar{\rho}_{X_1X_m} \\ ... & ... & ... & ... \\ \bar{\rho}_{X_mY} & ... & \bar{\rho}_{X_mX_{m-1}} & 1 \end{pmatrix}. \qquad (1)$$

The index of total volume of funding of NGOs from all sources is Y, indices of GDP components (according to distribution method) are X_1, X_2 and X_3, (taxes excluding production and import subsidies, gross profit and mixed income).

The values of correlation coefficients, which estimate the correlation between the funding of NGOs and indices of GDP components (according to distribution method), are given in the Table 1.

Table 1. The values of correlation coefficients which estimate the correlation between the funding of NGOs and indices of GDP components

	Y	X_1	X_2	C X_3
Y	1			
X_1	0.986187	1		
X_2	0.301463	0.299624	1	
X_3	0.968032	0.978213	0.375381	1

While analyzing Table 1, we can conclude that there is close linear correlation between Y and X_1, and Y and X_3, and there is a weak link between Y and X_2; thus, there is close direct linear correlation between indices of funding of NGOs and compensation of employees and gross profit and mixed income, whereas the correlation between the funding of NGOs and taxes excluding production and import subsidies is very weak.

Since the elements of the correlation matrix are used to measure the closeness of linear correlations of different pairs of variables, taking into account that the relation of each pair of variables is influenced by relation with other variables, the study of correlations in the

multidimensional model except the correlation matrix, it is also important to determine partial correlation coefficients, i.e., quantitative assessment of the closeness of correlation between the two variables provided that other independent variables are constant.

Selective partial correlation coefficients characterize the close relation between the two variables at fixed values of the other independent variables. Regular pair correlation coefficients characterize the closeness of the linear correlation considering the influence of other factors, i.e. a high value of the

pair correlation coefficient in case of multiple regression will not necessarily reflect the high degree of linear correlation between these two variables. This value can also be stipulated by the strong influence of some third variable on each of these variables, which ultimately results in high correlation of first two variables. Partial correlation coefficient allows to determine "clean" correlation between the two studied variables, excluding the effects of other factors.

Selective partial coefficients are calculated by the following formula:

$$\bar{\rho}_{ij}^{*} = -\frac{\bar{K}_{ij}}{\sqrt{\bar{K}_{ii}\bar{K}_{jj}}} = -\frac{\bar{K}_{ij}/|\bar{K}|}{\sqrt{\bar{K}_{ii}/|\bar{K}|}\times\sqrt{\bar{K}_{jj}/|\bar{K}|}} = -\frac{d_{ij}}{\sqrt{d_{ii}d_{jj}}}, \qquad (2)$$

Note: compiled by the author based on calculations performed using Excel tools.

where $\bar{K}$, $\bar{K}_{ii}$, $\bar{K}_{jj}$ are algebraic additions to elements $\bar{\rho}_{ij}$, $\bar{\rho}_{ii}$, $\bar{\rho}_{jj}$ of the correlation mat $\bar{K}$ correspondingly, and d_{ij}, d_{ii}, d_{jj} are the elements of the matrix $\bar{K}^{-1}$, inverted to correlation matrix $\bar{K}$.

The values of the partial correlation coefficients, which determine the "clean" correlation between the funding of NGOs and GDP indices (according to distribution method) are provided in Table 2.

Table 2. The values of the partial correlation coefficients between indices of funding of NGOs and GDP indices (according to distribution method) *

$\bar{\rho}_{YX_1}^{*}$	0.731472
$\bar{\rho}_{YX_2}^{*}$	-0.002671
$\bar{\rho}_{YX_3}^{*}$	0.089284

The values presented in Table 2 and Table 1 are slightly different. Only between Y and X_1 there is a close direct linear relation, and there are weak links between Y and X_2, Y and X_3. Thus, close direct linear relation exists only between index of funding of NGOs and the index of compensation of employees. This can be explained by the fact that the index of gross profit and mixed income is significantly higher than the indices of compensation of employees, so while compiling the correlation matrix this excess and the closeness of the correlation between salary, gross profit and mixed income indices can affect the correlation between the index of funding of NGOs and gross profit and mixed income indices, while the partial correlation coefficients show that there is no such correlation between them.

Table 3. The values of the partial correlation coefficients are presented in the column "Partial cor."

Variable	Variables currently in the equation, DV, Income from all sourses (Spreadsheet 12)						
	b* in	Partial cor.	Semipart cor.	Tolerance	R-square	T(4)	p-value
Comprehension of employees	0.909789	0.731472	0.17684	0.037784	0.962216	2.145484	0.098479
Taxes excluding production and import subsidies	-0.000507	-0.002671	-0.000440	0.753130	0.246870	-0.0005342	0.995994
Cross profit. Mixed income	0.078255	0.089284	0.014778	0.035661	0.964339	0.179284	0.866430

Note: Table3.Results of correlation and regression analysis in the Statistica system,compiled by the author based on calculations performed using the tools of the Statistica system.

To analyze the link between the indices of funding of NGOs and the components of GDP (according to distribution method) and according to the econometric model, we built paired linear regressions (Table 3). The following table shows

estimates of the parameters of the linear regression $\bar{g}(x) = a + bx$, coefficient of determination $\bar{R}^2$ and verification statistics F^* for the assessment of overall quality of the regression equation.

Table 4. The study of paired relation between the index of funding of NGOs and GDP indices
(according to distribution method) *

Dependent variable	Independent variable	a	b	$\bar{R}^2$	F^*
Funding of NGOs	Salaries of employees	-1.9943	0.9647	0.9672	177.0582
Funding of NGOs	Taxes excluding production and import subsidies	6.4371	-0.0050	0.0001	0.0006
Funding of NGOs	Gross profit and mixed income	-2.9707	1.0936	0.9294	78.9341

Note: compiled by the author based on calculations performed using Excel tools.

As $F^* > F_{\theta;l_1;l_2}$ only for the relation between indices of funding of NGOs and compensation of employees, and also between the indices of funding of NGOs and gross profit, then, provided that $\theta = 0.05$, these regression equations will be significant ($F_{\theta;l_1;l_2} = F_{0.05;1;7} = 5.591$).

Analysis of the data presented in Table 3 allows to suggest that there is a close direct linear paired correlation between the indices of funding of NGOs and compensation of employees, and between the indices of funding of NGOs and gross profit.

We constructed an econometric model of the relation between the indices of funding of NGOs (Y) and the components of GDP (according to distribution method) (X_1, X_2, X_3) for the observation period from 2006 to 2013. Construction of multi-factor linear econometric model of relations allows to find complex mechanism of influence of the GDP components (according to distribution method) on the index of the funding of NGOs.

The theoretical model of linear multiple regression describing correlation and regression relation of variable Y with X_1, X_2 and X_3 is formalized as follows:

$$Y = \tilde{g}\left(X_1.X_2.X_3\right) + \varepsilon =$$
$$\alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon ...., \quad (3)$$

where $\alpha, \beta_1, \beta_2, \beta_3$ are unknown theoretical regression parameters, and ε is a random theoretically deviation [3, p. 98].

Using the method of least squares we estimated the theoretical parameters of regression and constructed a selective linear regression equation of dependence of the funding of NGOs from the GDP indices (according to distribution method):

$$Y = -40.0414 + 0.0046 X_1 - 0.0000 X_2 + 0.0007 X_3, \quad (4)$$

We constructed a model of linear multiple regression in a standardized form. Standardized regression coefficients b_j^* ($j = \overline{1, m}$, m is a number of independent factors) are dimensionless values and, unlike conventional multiple regression coefficients, they can be compared with each other. The higher the ratio of b_j^*, the greater the influence of factor X_j on the dependent variable is Y factor X_j. Such content of standardized regression coefficients allows to use them while eliminating non-essential factors, namely we exclude factors with the lowest b_j^* value from the model. The selective linear multiple regression equation in standardized form looks as follows:

$$Y^* = 0.909789 X_1^* - 0.000507 X_2^* + 0.078255 X_3^*, \quad (5)$$

where Y^*, X_j^*, $j = \overline{1,3}$ are the standardized variables.

The linear multiple regression equation in standardized form allows to conclude that the greatest influence in forming the index of funding of the NGOs is variable X_1 (compensation of employees), which can be explained by the fact that the activities of the NGOs mostly cover legally employed workers and small and medium business, that bring the most money to support their activities and development. Variable X_2 (taxes excluding production and import subsidies) can be excluded from the regression equation. Variable X_3 has little impact on the formation of the index of funding of NGOs from all sources.

In general, the final results of correlation and regression analysis of the relations are shown in Fig. 2.

Table 5. The results of correlation and regression analysis in the Statistica system

N = 8	Regression summary for dependent variable: income from all sources (Spreadsheet 12) R = 98631809 R? = 97282338 Adjusted R? = 95244091 F(3.4) = 47.728 p< 00137 Std. Error of estimate:95, 10					
	b* in	Std. Err of b*	b	Std. Err of b	t (4)	p - value
Intercept			-40.0414	336.8936	-0.118855	0.911120
Compensation of employees	0.909789	0.424049	0.0046	0.0021	2.145484	0.098479
Taxes excluding production import subsidies	-0.000507	0.094980	-0.0000	0.0015	-0.005342	0.995994

Table 5 (cont.).The results of correlation and regression analysis in the Statistica system

N = 8	Regression summary for dependent variable: income from all sources (Spreadsheet 12) R = 98631809 R? = 97282338 Adjusted R? = 95244091 F(3.4) = 47.728 p< 00137 Std. Error of estimate:95, 10					
	b* in	Std. Err of b*	b	Std. Err of b	t (4)	*p*-value
Cross profit. Mixed income	0.078255	0.436487	0.0007	0.0037	0.179284	0.866430

Note: compiled by the author based on calculations performed using Excel tools.

We studied the selective coefficient of determination in more detail, which is the total value of quality of the regression model (measure of correspondence of the regression equation to empirical data). The coefficient of determination equals 0.9728 and may indicate that the variation of funding is largely explained by the changes in selected macroeconomic indices.

The regression equation is significant at a level of $\theta = 0,05$ as $F^* > F_{\theta; l_1; l_2}$, where F^* is the observed value of the criterion F, and $F_{\theta; l_1; l_2}$ is the critical values found in table of F-distribution. According to the study $F^* = 47.728$, and $F_{\theta; l_1; l_2} = 2,5868$, which is confirming the importance of the regression equation. If $p < 0,0137$, the regression equation is significant as a whole at the level of significance of $\theta = 0,05$.

Thus, the components of GDP (according to distribution method) such as the compensation of employees and gross profit and mixed income have the greatest influence on forming the index of funding of the NGOs.

3.2. The effect of changes in quantitative indices of the activity of Ukrainian NGOs on the volume of their funding. We also defined the impact of quantitative indices characterizing the activity of NGOs and can affect the formation of the index of funding of the NGOs. There are a number of quantitative indices. We analyzed the impact of some of them on formation of the index of funding of Ukrainian NGOs, in particular, the number of NGOs registered members, the number of companies, institutions, organizations founded and created by the associations of citizens, the number of organized events, the number of collective members (companies, institutions and organizations), the number of official employees, because they are of paramount importance in scientific discourses of verbal nature.

To analyze the link between indices of funding of NGOs and the quantitative indices of their performance, and to construct an econometric model, we first constructed paired linear regressions (Table 4).

Table 6.The study of paired relation between indices of funding of NGOs and the quantitative indices of their performance

Dependent variable	Independent variable	a	b	$\overline{R}^2$	F^*
Funding of NGOs	Number of NGOs	7.0168	-0.1236	0.0476	0.2997
Funding of NGOs	Number of NGOs registered members	-2.2368	1.1623	0.8661	38.8084
Funding of NGOs	The number of companies, institutions, organizations founded and created by the associations of citizens	11.7470	-1.5579	0.6826	12.9056
Funding of NGOs	Number of organized events	0.8306	0.9770	0.2256	1.7479
Funding of NGOs	Number of collective members (companies, institutions, organizations)	9.6064	-0.6791	0.3542	3.2901
Funding of NGOs	Number of official employees	11.9747	-1.2127	0.2659	2.1728

Note: compiled by the author based on calculations performed using Excel tools.

Table 6 allows to select the factors that have the most influence on forming funding of NGOs. Correspondingly, we include the number of registered members of NGOs and the number of companies, institutions, organizations founded and created by the associations of citizens to the linear model of multiple regression describing correlation and regression relation of the index of funding of NGOs and quantitative factors. The model is shown by Table 7.

To get more accurate results of the impact of certain factors on the formation of funding of NGOs we analyzed the relation between each component of (source of) funding of NGOs and the factors that influence these components. The analysis of relations is provided in Annex F.

Table 7.The linear model of multiple regression describing correlation and regression relation ofthe index of funding of NGOs and quantitative factors

N = 8	Regression summary for dependent variable: income from all sources (Regression_data) R = 97833488 R? = 95713914 Adjusted R? = 93999479 F(2.5) = 55.828 p< 00038 Std. Error of estimate:219.14					
	b*	Std. Err. of b*	b	Std. Err. Of b	t(5)	*p*-value
Intercept			2207 996	1042.463	2.11806	0.087721
Number of registered members	0.696703	0.134666	0.000	0.000	5.17358	0.003544
Number of companies, inst., org. founded by the NGOs	-0.347134	0.134666	-0.644	0.250	-2.57775	0.049567

Notes: where X is gross profit and mixed income; compiled by the author based on calculations performed using Excel tools.

Proceeds from the State Budget of Ukraine as a source of funding of NGOs have a close direct relation with factors such as compensation of employees, gross profit and mixed income, and the number of registered members of NGOs. As it has an inverse close relation with the number of companies, institutions, organizations founded and established by the NGOs. The latter can be explained by the fact that so far most NGOs do not establish anything to obtain additional resources and often use this opportunity to achieve other objectives, so as the number of established companies, institutions and organizations increases, the income from such companies remains unchanged, according to the official statistics certification, which, in turn, creates an inverse relation.

There are close direct relations between the membership fees and compensation of employees, gross profit and mixed income, and the number of members registered NGO. Just as there is an inverse relation for the State Budget of Ukraine and the number of companies, institutions, organizations founded and established by the NGOs. Another factor, which is the number of collective members (companies, institutions and organizations), has a moderate influence on the formation of membership fees. A similar relation is observed for NGOs income from charity (philanthropists of all kinds), business activity of the companies, institutions and organizations founded and created by the associations of citizens to enforce their statutory goals under the title "Other income".

As for the charitable donations from entities there can be observed the impact of the factor of the number of official employees, which can be explained as the larger the range of NGOs employees, the greater circle of benefactors and related persons. As often employees of the NGOs are people who have considerable fortune (work in Ukrainian NGOs does not bring considerable income, wages in the sector, as already noted, are significantly lower than the average wage in Ukraine) and have relations with registered entities.

It should also be noted that "Number of organized events" factor has a moderate direct impact on the income from business companies, institutions and organizations founded and created by the associations of citizens to enforce their statutory objectives, which can be attributed to the involvement of these companies, institutions and organizations, that can sell their own products and services in the process that further allocated directly to NGOs activities, into organizing and holding events.

This study of the paired relations of the separate sources of funding of NGOs and the factors affecting it suggests that among the elements of GDP (according to distribution method), compensation of employees and gross profit and mixed income have the greatest impact on them. Therefore, it is important to develop policies aimed at increasing income of the population and to support entrepreneurship at the state level. Taxes excluding production and import subsidies, as shown by our study, do not affect the formation of funding of NGOs.

Among the quantitative indices, which characterize the activities of NGOs and influence the formation of NGOs incomes from all sources, the following indices are distinguished: number of registered members of NGOs and the number of companies, institutions, organizations founded and established by NGOs.

If we conduct the correlation and regression analysis of the relations between indices of funding of NGOs and quantitative indices of the activity of NGOs (number of NGOs, the number of registered members of NGOs, the number of companies, institutions, organizations founded and established by NGOs and the number of organized and held events), then similarly to the preliminary analysis of paired relations the number of registered members of NGOs and the number of companies, institutions, and organizations founded and established by NGOs have the greatest impact Table 8, Table 9.

Table 8. The results of correlation and regression analysis in the Statistica system *

N = 8	Regression summary for dependent variable: Income from all sources (Regression_data) R = 98394878 R? = 96815521 Adjusted R? = 92569548 F(4.3) = 22.802 p< 01394 Std. Error of estimate:243.86					
	b*	Std. Err. of b*	b	Std. Err. Of b	t(5)	p-value
Intercept			1370.136	2208.819	0.62030	0.578990
Number of NGOs	-0.064553	0.236369	-0.001	0.005	-0.27310	0.802495
Number of registered members	0.70941	0.235118	0.000	0.000	2.98124	0.058539
Number of companies, inst., org. founded by the NGOs	-0.291538	0.269154	-0.541	0.536	-1.00824	0.387607
Number of organized events	0.1392283	0.160116	0.001	0.002	0.86988	0.448372

Notes: compiled by the author based on calculations performed using the tools of the Statistica system.

Table 9. The results of correlation and regression analysis in the Statistica system

Variable	Variables currently in the Equation, DV, Income from all sourses (Spreadsheet 12)						
	b*	Partial Cor.	Semipart Cor.	Tolerance	R-square	T(4)	p-value
Number of NGOs	-0.064553	-0.155752	-0.028137	0.189993	0.810007	-0.27310	0.802495
Number of registered members	0.700941	0.864662	0.307153	0.192020	0.807980	2.98124	0.058539
Number of companies, inst., org. founded by the NGOs	-0.291538	-0.503082	-0.103878	0.126958	0.873042	-1.00824	0.387607
Number of organized events	0.139283	0.448806	0.089623	0.414044	0.585956	0.86988	0.448372

Notes: compiled by the author based on calculations performed using Statistica tools.

3.3. The effect of changes of the most important factors on the volume of funding of Ukrainian NGOs.

Taking the results of the correlation and regression analysis of the impact of the GDP elements (according to distribution method) and quantitative indices of the performance of Ukrainian NGOs on the formation of their funding we performed the analysis of options for development and change of funding of NGOs, changing factors that influence most the formation of funding of NGOs, through the scenario approach. The scenario approach allows analyzing the options for changing funding of NGOs, changing the key factors, and make decisions by reviewing the results of various changes and selecting the most efficient (optimal) one.

In particular, we used the scenario approach for analyzing changes of the funding of NGOs, changing the value of factors "Compensation of employees" for 2013 (Table 5), "Gross profit, mixed income" (Table 6), "The number of registered members" (Table 7), "The number of companies, institutions and organizations founded and created by NGOs" (Table 13). The selection of factors is stipulated by the fact that they have the closest relation to the funding of Ukrainian NGOs during the whole period.

Table 10.The impact of the factor "Compensation of employees" on the sources of funding of NGOs

Funding index (Y)	Current value index Y	Y value with increasing X	Increase of Y (Y %)
From all sources, including:	3773977	4137417	9.63 %
from State Budget of Ukraine	332715.4	383083.3	15.14 %
from membership fees	543991.5	600612.8	10.41 %
all charity, including:	1614282	1780629	10.30 %
- charitable donations from entities	658079.3	706861.6	7.41 %
- charitable donations from citizens	188045.2	214258.3	13.94 %
- charitable donations from non-residents	758804.1	854873.2	12.66 %
economic activity of companies, institutions, and organizations founded and established by associations of citizens	609017	642121.8	5.44 %
other income	652455.2	715223.3	9.62 %

Notes: where X – compensation of employees;compiled by the author based on calculations performed using Excel tools.

As you can see from Table 5, the increase of "Compensation of employees" factor has a positive effect on the formation of NGOs incomes from all sources. Thus, the 10% increase in compensation of officially employed employees will increase the income of NGOs from all sources by 9.63%, including the increase in income from the State Budget of Ukraine – by 15.14% of membership fees – 10. 41%, proceeds from charity – by 10.30% (the biggest increase will happen in the public charity sector, namely 13.94%), income from business activity of companies, institutions and organizations

founded and created by associations of citizens to fulfill their statutory objectives – by 5.44% and from other sources – by 9,62%.

Increasing of "Gross profit and mixed income" factor has a positive effect on the formation of NGOs income from all sources (Table 9).

Table 11. The impact of "Gross profit and mixed income" factor and sources of funding of NGOs

Funding index *(Y)*	Current value of *Y* index	*Y* value with increasing *X*	Increase of *Y* (*Y* %)
From all sources, including:	3468328	3849340	10.99 %
from State Budget of Ukraine	290758.9	340568.5	17.13 %
from membership fees	499705.2	560136.7	12.09 %
all charity, including:	1463724	1631812	11.48 %
- charitable donations from entities	608753.2	657605.7	8.03 %
- charitable donations from citizens	170024.3	198332.1	16.65 %
- charitable donations from non-residents	673044.5	767890.9	14.09 %
economic activity of companies, institutions, and organizations founded and established by associations of citizens	586494.1	624926.1	6.55 %
other income	602404.2	669479.4	11.13 %

Notes: where X is gross profit and mixed income; compiled by the author based on calculations performed using Excel tools.

Thus, the increase in gross profit and mixed income at the national level by 10% will increase total income of NGOs at even faster rate – by 10.99%, which may be ensured by income from all sources: increase of income from the State Budget of Ukraine – by 17.13 %, from membership fees – by 12.09%, income from charity – by 11.48% (just as in the case of an increase of "Compensation of employees" factor public charity will demonstrate the biggest increase, namely, 16.65%), income from business companies, institutions and organizations founded and created by the associations of citizens to fulfill

their statutory purposes – by 6.55% and from other sources – by 11.13%.

Another factor, the increase of which should have a positive impact on the change of the index of total income of NGOs, is "Number of registered members" (Table 10). As in the case of "Gross profit and mixed income" factor, in the management of this factor, one can observe an increase of total income of NGOs at a faster rate than the increase of the factor itself. Thus, the change of the factor towards the increase by 10% will lead to the increase of total income of NGOs by 11.72%.

Table 12. The impact of "Number of registered members" factor on sources of funding of NGOs

Funding index *(Y)*	Current value of *Y* index	*Y* value with increasing *X*	Increase of *Y* (*Y* %)
From all sources, including:	3455194	3859976	11.72 %
from State Budget of Ukraine	301759	362238.8	20.04 %
from membership fees	484028.8	541337.2	11.84 %
all charity, including:	1506378	1709812	13.50 %
- charitable donations from entities	611386.1	665276.2	8.81 %
- charitable donations from citizens	162681.1	189113.2	16.25 %
- charitable donations from non-residents	722061.4	852198.2	18.02 %
economic activity of companies, institutions, and organizations founded and established by associations of citizens	547690.5	572858.9	4.60 %
other income	608859.9	684534	12.43 %

Notes: where X is the number of registered members; compiled by the author based on calculations performed using Excel tools.

Taking a close look at Table 12, we can see that change of "Number of registered members" factor with a tendency towards an increase has a positive impact on all sources of income of NGOs and provides the corresponding level of increase in total income. Thus, the increase of the given factor by 10% will increase income from the State Budget of Ukraine – by 20.04%, from membership fees – by 11.84%, income from charity – by 13.5% (mostly affecting the charity of non-residents – by 18.02% but also charitable donations from citizens will increase significantly – by 16.25%), income from

business companies, institutions and organizations founded and created by the associations of citizens to fulfill their statutory purposes – by 4.6%, and from other sources – by 12.43%.

Other effects may be observed as to "Number of companies, institutions, organizations founded and created by the associations of citizens" factor. Thus, in the development scenario that we considered while managing other factors, namely an increase in the factor by 10%, we can observe a change in the index of total funding in the opposite direction – reducing income by 13.80% (Table 13). Moreover,

the reduction is observed in the context of all sources of funding: the income from the State Budget of Ukraine will decrease by 21.42%, from membership fees – by 13.97%, total income from charity – by 15.26% (most sensitive to changes of the given factor, as in the case of the other factors, is the charity of citizens), income from business companies, institutions and organizations founded and created by the associations of citizens – by 6.85%, others – by 13.47%.

Table 13. The impact of "Number of companies, institutions, organizations founded and created by the associations of citizens" factor on sources of funding of NGOs

Funding index (Y)	Current value of Y index	Y value with increasing X	Increase of Y (Y %)
From all sources, including:	4580136	3948160	-13.80 %
from State Budget of Ukraine	472937.7	371630.7	-21.42 %
from membership fees	644645.1	554612	-13.97 %
all charity, including:	2043540	1731758	-15.26 %
- charitable donations from entities	851107.7	738760.4	-13.20 %
- charitable donations from citizens	255755.2	205503.5	-19.65 %
- charitable donations from non-residents	937422.1	780794.6	-16.71 %
economic activity of companies, institutions, and organizations founded and established by associations of citizens	641477.8	597559.8	-6.85 %
other income	779864.4	674831.6	-13.47 %

Notes: where X is the number of companies, institutions and organizations founded and created by the associations of citizens; compiled by the author based on calculations performed using Excel tools.

Conclusion

The results of the conducted analysis allowed us to determine that the greatest influence on the formation of income of NGOs from all sources have both those factors that directly characterize their activity (number of registered members, the number of companies, institutions, organizations founded and created by the associations of citizens) and those which indirectly affect it (compensation of employees, gross profit and mixed income). It is, therefore, advisable to implement public policies to support the development of NGOs and managing them. Thus, policies aimed at improving the welfare of society: raising wages of employees and increasing profits and mixed income, which is one of the priorities of the state, can lead to an almost proportional increase in income of NGOs (an increase by 10% of each of these parameters stipulates an increase in the income of NGOs by 9.63% and 10.99%, respectively). What is more, this policy affects the income from the State Budget of Ukraine, as well as from the charity of citizens and non-residents, which is quite logical: an increase of income and profits within the state not only affects the ability and propensity of the population to charity, but also increases the investment attractiveness of the state, the development of its civil society, which leads to an increase of charity from non-residents. At the same time, an increase of income and profits is associated with an increase in tax paid in the state and, therefore, state expenditure is higher and it is allocated in various sectors, including the activity and development of NGOs. Such factor as "The number of registered members" has a similar impact on income of the NGOs from

all sources. Its growth also proportionally affects the increase of incomes from all sources – by 11.72%. The highest increase is observed from the same sources: the State Budget of Ukraine and charitable donations from citizens and non-residents. However, it should be noted that the nature of this increase can be different: it varies because of the structure of the NGOs depending on the purpose and activities, which, according to our study, is characterized by the predominance of NGOs in recreational, cultural and sports sphere and those, representing and defending the interests of youth, veterans, disabled etc. Thus, on the one hand, these NGOs are funded by the state, so the bigger the number of registered members, the more public funding there is, but on the other, because there are legal obstacles for payment of membership fees, they are often registered as charitable donations of citizens who are members of or have direct connection to the members of the NGOs. At the same time, these kinds of NGOs are most often supported by non-residents: international NGOs or representatives of diaspora, thus, increasing the number of members of NGOs also leads to an increase in donations from non-residents.

"Number of companies, institutions and organizations founded and created by the associations of citizens" factor has the opposite effect on the income of NGOs in comparison to the previous ones. Although, we shouldn't talk about the need to reduce the number of NGOs or creating more stringent regulations for the establishment of these organizations to increase the funding of NGOs, because the reason of this discrepancy isnt the reduction of the funding of

NGO by increasing, for example, competition, and the fact that while there has been a significant increase in the number of NGOs in Ukraine (the number increased in by 49.27% from 2006 to 2013), the percentage of organizations that actually carry out activity and reported it to statistics agencies, remained virtually unchanged and fluctuated within the limits [38.6%: 41. 7%]. Thus, it is necessary not to make the rules of registration and organization of the NGOs stricter (which already are some of the most stringent in the world), but change the rules of accounting and reporting. For example, nowadays, there are no substantial measures or prosecution of the leaders of NGOs that have not reported about NGOs activities to tax authorities and statistics agencies.

State policy should contribute to the welfare of the state and population, encourage public participation in the activities of various NGOs, which not only increases the income to budgets of NGOs, but also increases the level of civil society development and improves the image of the state in the world, simultaneously with the implementation of the policy of simplification of reporting and accounting for NGOs through, for example, its automation and intensification while increasing the accountability of the managers of NGOs for the evasion of such reporting, even incurring administrative liability and deprivation of the right to manage the NGOs.

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