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Babych Olga,
Kyiv National Economic University

STATISTICAL ESTIMATION OF COMPANIES' DISTRIBUTION ACCORDING TO THE RESOURCES' VALUE AND OBTAINED ECONOMIC ACTIVITY RESULTS

One of the major tasks of the subjects of economic activity, including insurance companies, is maintenance of stable development between individual subsystems on the correlation basis.

The important point in management of insurance activity efficiency is maintenance of proportionality between effect and resources. The special place is occupied by the estimation of distribution proportionality of profit as efficacious attribute and assets of insurance companies as factorial attribute.

With this purpose statistical methods of the proportionality analysis are applied on the basis of both localization and concentration coefficients, and the Lorenz curves.

The value of the localization coefficient estimated according to this method proves efficiency of using resources and specifies intensive or extensive type of development of the corresponding insurers' groups.

Calculation of concentration coefficient enables to speak about uniformity of profit and assets distribution.

The statistical analysis carried out according to these directions, enables to make the administrative decisions directed to increasing the efficiency of insurance companies' activity in Ukraine.

For such analysis it is necessary to select aggregate of insurance companies and to classify it. The aggregate of 50 insurance companies operating in Kiev are chosen in this article. The classifying factor is

the volume of owned capital, which is a source for financial obligations performance, and the major condition of insurer's solvency maintenance. The classifying results are the following:

Groups according to the volume of owned capital, mln. hrn.	Number of insurance companies
Up to 0.5	9
1.0—3.0	14
3.0—5.0	9
5.0—17.0	5
17.0 and more	6
Total	**50**

Thus, totality of insurance companies is divided into 5 groups according to the size of owned capital. This distribution shows, that the volume of owned capital of the greatest number of the companies in the researched totality (28 %) is from 1 up to 3 mln. hrn. Owned capital of one-half of the researched totality of the insurance companies does not exceed 3.0 mln. hrn.

It is common knowledge that the basic compound insurance companies owned capital is statutory fund. In view of special requirements to the insurer's solvency the legislation establishes restrictions concerning its size. According to the legislation [1, article 30] the minimal size of the statutory fund for the non-life insurance companies is established in the sum equivalent to 1 million Euros under the currency exchange rate of Ukrainian currency. Thus, on the basis of above mentioned it is necessary to draw attention to financial opportunities of insurance obligation performance by the part of the Ukrainian insurers.

So, proportionality of distribution is the analysis of interrelations in distribution of the effect and expenses for achieving such effect among insurers' groups.

Let's designate efficacious attribute — amount of profit P and a factorial attribute — amount of assets A. The part of the profit in total amount calculates as $d_p = \frac{p_i}{P}$, and a part of assets — $d_A = \frac{A_i}{A}$.

Ratio of the parts of profit amount and assets amount on each group is called the localization coefficient and estimated under the formula $K_{лок} = \frac{d_p}{d_A}$.

It shows distinction of the parts of the efficacious attribute compared with a part of the factorial attribute. If the coefficient of localization is

less 1 then the given group has less profits than in relation to a proportional part of the factorial attribute (assets amount), and on the contrary.

The coefficient of concentration can be calculated according to the following formula:

If $K_{conc} = 0$ the distributions coincide. The higher the value of K_{conc} the more essentially is the difference between distributions.

On the basis of the analysis results the offers for improvement of distributions management are developed, though not at a level of optimum ratio, but at least concerning rational results. In such way statistical proportionality research creates preconditions for improvement of management processes regarding coordination of interconnected parameters of distribution, results of activity and factors, which have essential influence on consistency of distributions.

Ratio between the parts in the form of the localization coefficient ($K_{loc.}$) is calculated in Table 1.

As in the majority of insurance companies groups the localization coefficient is less than 1, it means that these groups have less profit, than in relation to a proportional part of assets. The worst situation is in proportionality profit and assets distribution in the group of insurers with owned capital 5.0—17.0 mln. hrn. (this group occupies 10 % of the companies from total amount of the researched totality of insurers) where the value of localization coefficient is the lowest, that specifies low resources use efficiency by 10 % of the companies.

Table 1

LOCALIZATION COEFFICIENT CALCULATION

Groups according to the volume of owned capital, mln. hrn.	Profit, hrn. thousands	Assets, hrn. thousands	Weight of		K loc.	rank
			profit	assets		
	1	2	3	4	5 = 3/4	6
Up to 0.5	569,4	15181,8	0,005	0,021	0,256	2
0.5 — 1.0	2766	36852,8	0,026	0,050	0,512	4
1.0 — 3.0	5004	97125,5	0,046	0,132	0,351	3
3.0 — 5.0	21421,5	112301,8	0,199	0,153	1,301	5
5.0 — 17.0	1068,8	89897,5	0,010	0,122	0,081	1
17.0 and more	76959,9	384003,1	0,714	0,522	1,367	6
Total	107789,6	735362,5	1,000	1,000	X	X

And only in two groups of insurers with the amount of owned capital 3.0—5.0 mln. hrn. (18 % of the companies) that is more than 17.0 mln.

hrn. (12 % of insurers) a part of the profit is bigger than a proportional part of assets that testifies the high assets use efficiency in these companies that makes 30 % from total amount of researched insurers' totality.

The diagram of localization coefficient on insurers' groups demonstrates the above mentioned (fig. 1).

Thus, four insurers' groups (70 % of all researched insurance companies) have deformations between the effect and resources that form this effect, in other words the disproportion between the insurers' profit and assets is observed. It is the basis for administrative decisions development directed to the growth of insurers' efficiency and revealing reserves for its increase.

The diagram shows the tendency that with the increase of owned capital amount the use of resources efficiency in insurers' groups grows (not taking into account the groups with amount of owned capital 1.0—3.0 mln. hrn. and 5.0—17.0 mln. hrn.).

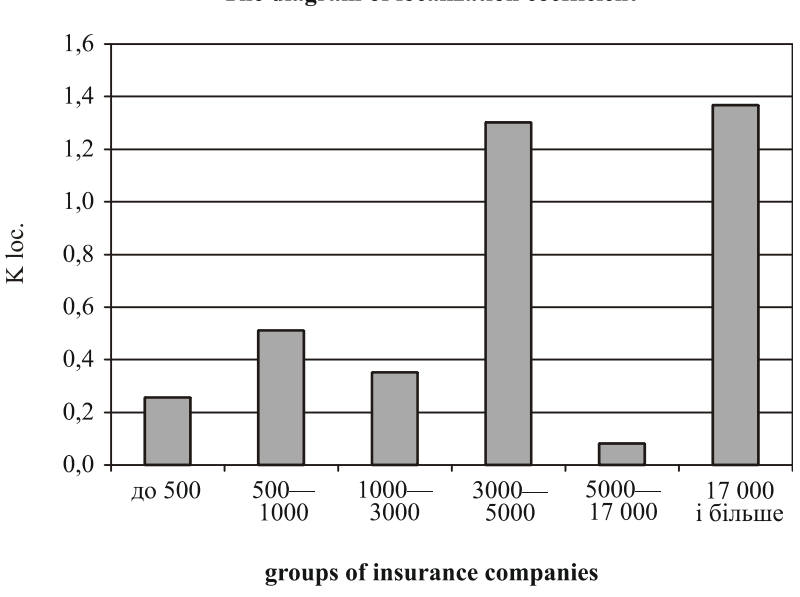

Figure 1. Profit and assets localization coefficient of insurers' groups in 2001

For the summary proportionality characteristics let's draw the Lorenz curve and the corresponding concentration coefficient, as the generalizing parameter of profit and assets distribution proportionality of insurance companies groups (table 2.).

Table 2

CALCULATIONS NEEDED FOR CONCENTRATION COEFFICIENT OF INSURER'S PROFIT AND ASSETS IN 2001

Groups according to the volume of owned capital, mln. hrn.	rank	Weight of		dp-da
		profit	assets	
5.0 — 17.0	1	0,010	0,122	0,112
up to 0.5	2	0,005	0,021	0,016
1.0 — 3.0	3	0,046	0,132	0,086
0.5 — 1.0	4	0,026	0,050	0,024
3.0 — 5.0	5	0,199	0,153	0,046
17.0 and more	6	0,714	0,522	0,192
Total	**X**	**1,000**	**1,000**	**0,476**

Thus, the coefficient of concentration is: $K_{conc.} = 0{,}476:2 = 0{,}238$, that testifies too small distinction in the given and uniform distribution and the Lorenz curve diagram is one more prove of it (Fig. 2.).

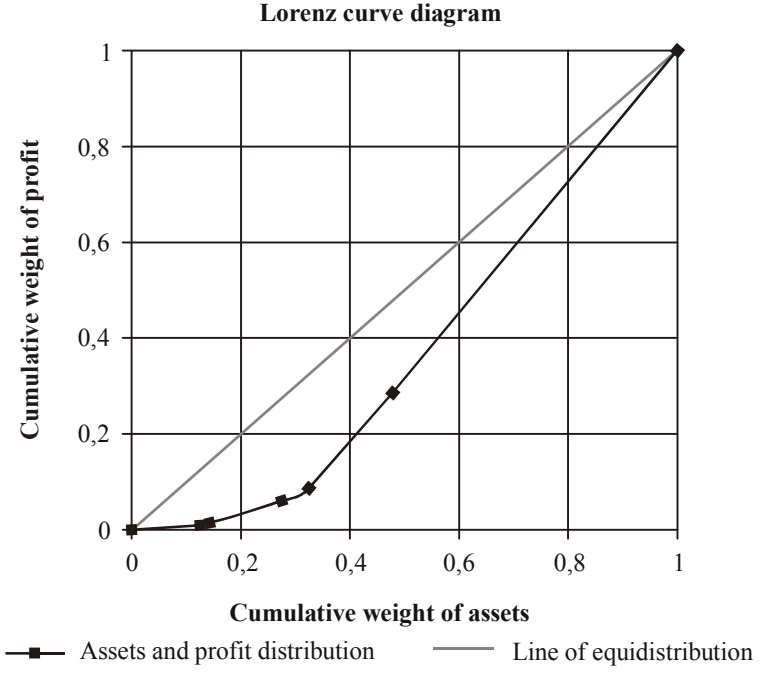

Fig. 2. Lorenz curve diagram

The carried out analysis has enabled to notice the tendency that with increase of the owned capital amount the efficiency of resources use by insurers' groups grows. But the analysis of proportionality also specifies that potential opportunities of receiving profits from the deposited assets in the majority insurers' groups are still not used in full scale, therefore administrative decisions have to be directed to this point.

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