STUDY ON THE MAIN THEORETICAL ASPECTS RELATING TO THE PREMIUM TARIFFS IN THE PROPERTY INSURANCE

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ABSTRACT

In the insurance market of goods, most of the first levied by the insurer is used for payment of damages due insured. The element mainly depending on which he fixes the level of share premium pricing is likely to size claims the insurer will pay insured.

Part of the quota tariff intended for the first payment of damages is called net or share of first base.

Adding to the addition cover expenditure on lodging and administering the fund insurance and financing of measures to prevent the damage, formation of the reserve fund and achieve the insurer has a specific benefit, get the first tariff or first gross.

Keywords: tariff premium, insurance, average compensation

Determining the level of tariff premium quota based on which the amount of insurance premiums paid by insured people is determined, has a great significance within the insurance activity. They result from the fact that without determining the level of tariff premium quota based on scientific criteria, there is no certitude that the insurer will be able to provide an insurance fund that corresponds to the liabilities undertaken.

In order to calculate the net premium starting from the compensation index, which indicates the average amount of the compensations paid by the insurer for every 100 units of insured amount for a certain category of assets[4].

The average compensation index can be considered the base for determining the net premium, because the total of compensations paid by the insurer indicates the actual amount of the liability undertaken by it in the past. This amount allows to determine, based on probability calculations, the level of the net premium necessary for establishing an insurance fund at the level of insurer's liability in the future. Knowing the amount of compensations for every 100 units insured sum, for a certain passed period of time, in a certain category of property, we can determine the net premium for 100 units of insured sum for future periods.

The compensation index can be calculated based on the data provided by the insured statistics. The number of years for which the compensation index has to be determined varies depending on the nature of the property and the types of risks included in the insurance. The bigger is the number of years for which the compensation index is determined, the more safety there is that it will indicate a higher level of precision, the size of the net premium[1].

Based on the insurance practice, the conclusion has been reached that in the case of animals' insurance, the number of years that give enough guarantee in determining the compensation index is between 5 and 7 for buildings and other constructions for some risks – between 10 and 15 years, and for other, earthquake, between 30 and 40 years for agricultural cultures between 15 and 20 years.

In order to calculate the annual compensation index, the following formula can be used[2]:

$$I = \frac{S}{N * V}$$

$$I = \frac{n}{N} * \frac{v}{V}$$

I – annual compensation index
S – total amount of compensations paid by the insurer
N – the number of insured property
V – average value of insured sum
n – number of compensated property
v – average value of compensations paid for insured property

This formula helps determining the compensation index for every year separately during the determined period. After determining the annual compensation indices, the average compensation index is calculated as a simple arithmetic mean. The average compensation index is compared with annual compensation indices in order to determine whether there are differences in addition or in minus[3].

The existence of such deviations is determined and the unit net premium cannot be equal with the average compensation index.

If such a net premium is accepted, there is the possibility that the sums resulted from insurance premiums made by an insurer cannot be enough for covering all the damages caused by insured risks. In order to remove such

a possibility, the average compensation index is completed by risk. The size of this risk is influenced by the level of annual compensation indices deviations in comparison to the average compensation index resulted through the calculation of the mean square deviation[2].

In order to determine the mean square deviation, we introduce the following notations:

f_k – proportional frequency of compensation index in year k,

x_k – number of compensated property in year k,

n – number of compensated property during the entire period considered

i – average value of the compensation year during the period considered

I_k – compensation index in year k

σ^2_1 – dispersion

σ_1 – mean square deviation

When determining the mean square deviation, it is indicated to renounce to the average compensation index because the mean square deviation should be used only if compensations frequency is unchanging.

The compensation index I is of the form of a random variable:

$$I = \begin{pmatrix} I_1 I_2 I_{3.....} & I_n \\ f_1 f_2 f_{3.....} & f_n \end{pmatrix}$$

Relative frequency (f_k) is determined based on the formula:

$$f_k = \frac{x_k}{n}$$

The average value of the compensation index I is calculated based on the formula:

$$i = \sum_{k=1}^{n} I_k * f_k$$

In order to calculate the dispersion, we use the formula:

$$\sigma_I^2 = \sum_{k=1}^{n} (I_k - i)^2 * f_k$$

In order to determine the mean square deviation, we use the formula:

$$\sigma_I = \sqrt{\sum_{k=1}^{n} (I_k - 1)^2 * f_k}$$

The net unit premium p results through the sum of the average compensation mean (I) with the mean square deviation σ_1.

$$p = I + \sigma_I$$

An addition is necessary to the resulted net premium for:

- Establishing the reserve fund used in case of recording a compensation index bigger than the one considered;
- Financing damages prevention actions;
- Covering the costs for establishing and managing the insurance fund

This sum results into the gross premium that we note P:

$$P = p + a$$

a – addition or supplement of net premium.

In order to determine the level of the quota necessary for establishing the reserve fund, it is necessary to make a statistical-mathematic analysis, being necessary to determine whether the damages causing phenomena to insured property have a normal distribution or not. Insurance statistics data show that such phenomena appear as random variables without a normal distribution. In order to have a probability for the level of the net insurance premium to allow full coverage of the insurer's costs with compensations for the property, the reserve fund related quota will have an addition of 25% to the net premium, admitting the time probability is 0,75.

The quota of the fund for financing damages prevention actions is determined depending on the size of the actions that such an insurance company wants to develop or taking into consideration the possible legal provisions that require such measures.

The necessary quota for providing the money resources for covering the costs for establishing and managing the insurance fund, can be determined depending on the level of these costs. The level of this quota is different between legal property insurances or facultative insurances[4].

In the case of legal insurances, this quota is lower than in facultative ones because they are compulsory and unlimited and suppose periodic determination of costs regarding insurance contracting.

Profit achievement related quota is determined at a level that allows the insurance company to pay its obligations to the state budget and make the sampling it is entitled to for supplying its own funds.

The determination of insurance premiums based on statistic-mathematic methods has no difficulties in the case of the property already comprised in the insurance and there is a database regarding the frequency and intensity of risks for a period of several years. The calculation of insurance premiums for comprising in the insurance some uninsured property has some difficulties. There is not always enough statistic data strictly necessary like: the extent of damages caused by certain risks on types of property, on property branches and forms and time periods that make it compulsory to calculate insurance premiums based on scientific criteria.

Such data recording and knowledge has significance in relation to possible inclusion of the property in the insurance and in relation to making economic and financial decisions at macroeconomic level.

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