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**ANALYSIS OF FINANCIAL PRINCIPLES OF AN INSURANCE  
COMPANY'S OPERATIONS**

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**ABSTRACT**

*One of the most important conditions for an insurance company's operation is to secure and utilize the necessary monetary and other funds in the required amount in order to settle all liabilities properly - first and foremost to policyholders, then to suppliers, employees and the state. Insurance companies, as one of the most important links in the chain of social reproduction of financial flows, largely establish their success and development on the financial principles of operations. They rely on a multitude of factors, but are nevertheless based on the number, scope and extent of concluded insurance contracts, i.e. on the insurer's insurance portfolio.*

*In their operations, insurance companies must comply with several indispensable financial and economic principles: security, liquidity, productivity, cost- effectiveness and profitability. It is important to emphasize that the implementation of the stated principles in insurance companies is characterized by both the distinctiveness arising from the peculiarities of the insurance business itself and the lack of general agreement on the manner of its expression.*

*The subject of the research in this paper will be precisely the principles that characterize the financial side of insurance companies' operations, regardless whether they are engaged in life or non-life insurance operations.*

**Keywords:** *Business and Financial Analysis, Insurance, Audit, Liquidity*

**JEL Classification:** *I21, G10, G22, G33, M42*

## INTRODUCTION

The safety or security of conducting business with numerous policyholders is one of the essential financial principles of an insurance company. In order to gain full security in the insurer's work, insurance conditions and premium price lists are fully built on the scientific grounds from theoretical assumptions – the laws of large numbers, probability calculus and numerous statistical and mathematical models.

When looking at a large number of cases, certain regularity in the occurrence of an event is developed. For instance, the number of fires in a country observed over a number of years indicates that it is approximately the same size: sometimes this number is larger, sometimes smaller, but one can determine some regularity in its recurrence. In this case, with a certain insurance company, if the number of observed cases is higher, it will indicate that the results are more accurate – it cannot be the same whether we have data on one or two portfolio insurances or fifteen thousand of them. This is the essence of the law of large numbers. [2]

By means of the law of large numbers, one arrives at the average i.e. the most expected value of the observed size. Its importance for the safe operation of an insurance company is extraordinarily high, as the uncertainty and coincidence of an insurer are transformed into regularity and legality. The law of large numbers is the basis of the probability calculus as the average occurrence, which is fortunately calculated by it, enables the perception of the number of such future occurrences.

The probability of occurrence of an event is defined as the ratio between the number of favourable prospects and the number of total prospects that exist with respect to its occurrence. Thus, the probability of getting the number 6 on one role of a dice is 1: 6. The probability calculus, along with the law of large numbers, represents the scientific basis of the insurance technique. It determines the likelihood of a certain danger, i.e., the degree of possibility of an insured event.

It is always necessary to consider that the results are of approximate size, however large the insurance portfolio might be. Only if the number of insurance contracts were infinitely large would the calculation provide the exact, mathematical value of the required size. Deviations from the calculated degree of probability also indicate some regularity in large series. Therefore, the defined percentages of favourable probability are subsequently modified by this legality with the assistance of this law. [11]

For an insurer to conduct business safely, creating a community of risks based on statistical and mathematical settings is not enough. One must also take into account that the excess risk, which the insurer cannot bear on its own, is transferred to other insurers, i.e., to reinsurers through co-insurance and reinsurance. In this way, the insurer's risk community is connected with the risk communities of other insurance or reinsurance providers. This can be defined as the external linking of danger communities. [14]

When considering security in insurance, spatial and temporal side of risk has to be taken into account persistently. The occurrence of individually large or devastating claims, as well as a considerable number of small claims, can put

insurers in such a position that they cannot fulfil the policyholders' liabilities. This notifies the insurer that they should keep only those risks which allow them the compensation for the caused damage by their own funds (or the secured ones).

In particular, the insurers have to ensure that their capacity – self-retention, is properly and expertly evaluated, and that everything which cannot be covered at a given moment is handed over to co-insurance or reinsurance. Thus, as the insured transfers the risks to the insurer, the insurer should also transfer the excess risk to other carriers. By properly determining their own risk-bearing capacity and transferring excess risk beyond their own self-retention to co-insurance and reinsurance, the insurer achieves the desired safety at work. In this way, the insureds are also fully protected. [3]

The development of science and technology has created vast material assets of great value, often centered in one place. Insurers are increasingly unable to cover such severe risks with their own funds, especially in insuring the industry. [17]

Frequently, reinsurance is the last solution in risk mitigation. The risk is distributed over a large number of people, sometimes over a very wide area – across multiple continents. Thus, severe risks that the insurer could not offset through indirect insurers, i.e., the reinsurers, become uniform and acceptable to all parties in the business.

Spatial risk mitigation is achieved through reinsurance by the reinsurer transferring the taken part to other reinsurers in the country and the remaining surplus is “exported” abroad. Hence, reinsurance is a real international business, which, as a rule, goes beyond national borders. It is said to be “without a doubt the world's largest sector of the insurance market”. [4]

Due to the particularities of the reinsurance business, there are certain expressions which are used infrequently, so it is necessary to explain them in more detail. Self-retention is one of the basic factors in determining which risk will reinsurance entail.

In case of large partial or total damage, self-retention represents that part of the risk which the insurer may cover from his/her own funds, as long as s/he does not become insolvent once the payment has been made.

The amount of self-retention depends on a number of factors and its calculation is the result of the actuarial services, but also the additional effect of a number of factors, such as: technical premium, security reserves, sum insured, probable maximum loss, etc.

Unlike large, well-developed insurance companies, small insurers, whose portfolio is still unbalanced, have to carefully determine self-retention for their own safety.

These insurance companies may be forced to put a much larger share of their capital at risk than more established companies do.

Properly calculated height of self-retention is of high importance. Very low self-retention for the insurance company means a large and unnecessary outflow of premiums into reinsurance, while very high self-retention carries the danger that by paying large damages, the company will fall into financial difficulties and become unable to meet liabilities. Self-retention is the name used for the part of the risk that

the insurer bears in proportional forms of reinsurance. On the other hand, in disproportionate contracts, the part borne by the cedant, i.e., the insurer, is called the priority. [10]

Probable maximum loss is the second factor, highly important to select when placing risks into reinsurance. In the professional world, this term is popularly called “PML” (Probable Maximum Loss). Namely, during a damaging event, the material good is almost never completely destroyed. In the worst-case scenario, there is usually at least some residual waste material left behind. The probable maximum loss is the upper amount of full damage that can be expected with almost 100% probability on one insured risk. Therefore, it is an economic determinant, representing the greatest damage to a particular insured facility or group of risk-bearing facilities that can be expected from certain experiences, expertise and knowledge of the technical and technological specifics of particular risks.

The assessment of the probable maximum loss determines the extent to which the reinsurer’s liability extends, thereby creating the conditions for the risk to be fully distributed. The first insurer (cedant) determines the share of his/her self-retention within the probable maximum loss and the remaining part is split between the reinsurers within the reinsurance plane.

Probable maximum loss is one of the basic determinants of reinsurance.

Therefore, its assessment is a very complex and professional task, especially in the case of expensive and complex imported equipment, equipment manufactured in several countries or obsolete equipment that is no longer manufactured. The assessment of probable maximum loss should be done by professional institutions or teams of various experts (engineers, economists, technologists, etc.), which are usually employed by the insurer.

As with self-retention, a proper estimation of the probable maximum loss is extremely important, as underestimating or overestimating the damage can have the same consequences as an error in self-retention assessment. Probable maximum loss is most often expressed in absolute numbers, but it can also be determined by percentages.

In order to prevent malpractice of insurers, reinsurers usually incorporate a provision for the wrong estimation of the probable maximum loss in the contract, since for a low estimation of the probable maximum loss, fairly small reinsurance premiums are paid, and with the occurrence of the damages a far greater amount is charged than the estimated value itself. Based on the contract provision, only a certain percentage of the estimation error can be recognized. [12]

Therefore, the safety of the insurer, i.e., the insurance company, represents the ability to compensate the insured for all the damages in number and amount, regardless of their individual and total amount. The principle of safety enables the insurer to successfully operate throughout a year even in the event of a very unfavourable movement of claims. It is particularly important for operations with very different amounts of insurance, as well as circumstances where excess amount of risk occurs, for example, in the insurance of ships, aeroplanes, large industrial and non-production facilities, etc. [1]

## LIQUIDITY

Liquidity or solvency in insurance is the product of a well-designed market policy of an insurer, which is first of all reflected in the collection of insurance premiums.

But collecting a premium is just one of the solvency factors; this can also include co-insurance and reinsurance claims, and investment and improvement of quality insurance.

As a rule, the insurance premium is charged in advance for a specific insurance period, and damages for a large number of contracts occur from the first to the last day of the period for which the premium is charged. While it is not difficult to plan and determine the size of insurance premiums, it is very difficult and ungrateful to plan damages.

In market and stable economies, with a properly designed economic policy, the total as well as the insurer's payments should not be questioned. But when it comes to insurance companies in underdeveloped or developing countries, this often becomes a problem. One of the biggest opponents to the payment of insurance companies in developing countries, and therefore in our country, is undoubtedly inflation.

Price growth in itself represents a problem for every economy, and especially for the insurance industry. One can freely say that inflation has been present in our economic life for a number of recent years. It produces a devastating effect on insurance, directly affecting the solvency of each insurance company. To counter this, insurance companies utilize a variety of solutions, such as price adjustments or total liability limits.

With reference to inflation, it directly and indirectly affects many insurance businesses, such as: resolving claims, calculating insurance premium, generating income from insurance fund investment, providing the necessary amount of company reserves and shareholder dividend payments.

Given the impact of price rises, the financial position of insurance companies can very quickly shift from successful (profitable) to unsuccessful, putting the insurance company in a position to operate at a loss.

By the nature of its business and the principles of the insurance industry, the insurance company is obliged to maintain the payment and to timely settle the insurance benefits and all other liabilities it has. As a rule, it can deposit and invest its own funds, but on the condition that it provides solvency.

Illiquidity, which can be especially prevalent in developing countries, leads to bankruptcy in the worst case. To prevent this from happening, solvency can also be monitored using specially developed forms, the findings which provide sufficient advance notice to management to take appropriate action. [6]

The Law on Insurance and by-laws regulate the duty of an insurance company to take the necessary measures to preserve security i.e., investments with the aim not to jeopardize their real value and development of the company in fulfilling its obligations under the insurance contract and other liabilities, and to inform the supervisory authority thereof. [16]

The liquidity of the insurance company is determined and monitored starting from [10]

- cash flows and
- playability indicators.

Cash flow represents a relationship between two parties: the first one maintains all cash inflows from insurance, investment and other cash transactions (such as capital inflows or long-term and short-term loans). The second party maintains all cash outflows from insurance, investment and other monetary affairs (such as outflows on repurchasing the company's own shares, long-term and short-term loans, dividends paid, etc).

The solvency indicator implies the relationship between the solvency margin and the liabilities of the insurance company.

Within this framework, the following means of payment are considered:

1. Monetary resources, as follows:
  - cash in hand;
  - money in the official currency of the country in current business accounts that does not serve as security for the settlement of other liabilities;
  - foreign currency funds on current business accounts that do not serve as security for the settlement of other liabilities;
  - accounts receivable from a cashless payment account created through mutual debts and receivables;
2. Securities, as follows:
  - government securities;
  - other securities traded on the regulated market;
  - other securities;
3. Claims due within the next fourteen days from the date of determining the payment capacity of the insurance company, which are covered by the means of security of payment (check, backed bill, bank guarantee);
4. Unused portion of the indicative bank loans granted to the insurance company;
5. Certain expected inflows in the next fourteen days on the basis of insurance premiums and reinsurers' share of the insurer's claims.

Liabilities of an insurance company are considered to be due liabilities and liabilities that mature within fourteen days from the date of determining the payment indicator and which are determined on the basis of regulations, insurance contracts, actuarial calculations, etc. Liabilities include:

- liability for damages;
- liabilities arising from coinsurance and reinsurance premiums;
- liabilities arising from investments, long-term and short-term loans and other financial liabilities;
- payroll liabilities;
- tax and contribution liabilities;

- lease liabilities and
- other liabilities from the company's operations.

An insurance company has an acceptable solvency if the cash flows are positive, i.e., if the cash balance is greater than zero and the solvency indicator (means of payment/liabilities) is at least one at the end of the day.

Insurance companies are not permitted to become insolvent. Not only do they have to be able to pay their current liabilities on a regular basis, they are always obliged to have funds at their disposal that are not less than the statutory payment cap. As in Serbia, there is also a rule in the world that this stock is calculated in different ways, expressed separately for life or non-life insurance. [7]

Also, the insurance company is obliged to calculate the solvency margin on the last day of the current accounting period, using specially prescribed forms, as follows: [16]

- 31<sup>st</sup> December of the current year (calculation for the current year as a whole);
- 31<sup>st</sup> March of the current year (the calculation refers to the period from 1st April of the previous year to 31st March of the current year);
- 30<sup>th</sup> June of the current year (the calculation is for the period from 1st July of the previous year to 30th June of the current year) and
- 30<sup>th</sup> September of the current year (the calculation is for the period from 1st October of the previous year to 30th September of the current year).

## **PRODUCTIVITY**

Productivity, i.e., efficiency as a general economic term, involves the creative power of labor to produce a certain number of products or services in a unit of working time. Productivity will be higher if more goods are made with the same labor cost, or the same quantity at the same cost. It is expressed by the number of goods produced per unit of time, that is, the consumption of labor per unit of product. The quantity of goods produced or services rendered is precisely proportional to changes in labor productivity and inversely proportional to the consumption of labor per unit of product. [5]

The principle of productivity in the insurance industry implies the pursuit of a certain amount of calculated premium or income with the least use of labor. It can be expressed and monitored over a period of time for parts of the enterprise, for society as a whole, or for several insurers (or all of them) in the country. The average amount of premium or income per employee is used as an indicator. Improving productivity is achieved by increasing the premium as a key revenue item, that is, revenue as a whole, by reducing the number of employees or, most often, by the simultaneous effect of these factors.

The level of productivity can be expressed as follows:

$$P = \frac{TR}{E}$$

P – productivity; TR – total revenues; E – number of employees.

Every insurer should consider measures to increase productivity in the workplace.

These measures can be divided into two groups: [8]

- internal regulation measures and
- technical rationalization measures

Internal regulation measures include: 1. procedures for ensuring the best educational structure of employees. They are aimed at selecting and further improving employees for a particular type of expertise. If a workplace is covered by a worker with appropriate education and knowledge, a very important prerequisite for achieving high productivity is provided. 2. Workflow measures. These measures include: assigning workers to appropriate jobs in accordance with their level of expertise and abilities, choosing appropriate working hours and upgrading the performance of their jobs. 3. measures of remuneration and/or employee rewarding; and 4. measures relating to the protection of the health of workers and the prevention of occupational diseases.

In order to contribute to increased productivity, technical rationalization measures aim at improving the working conditions of all parts of the insurance company – insurance acquisition, damage assessment, office work, etc. These measures include: provision and arrangement of adequate workplace premises, maintenance of vehicle fleet, full implementation of information technology, improvement of technical prospects of flow between individual parts, i.e. company services, etc.

## **COST-EFFECTIVENESS**

Cost-effectiveness is one of the basic indicators of business efficiency.

Indisputably, it is one of the most important indicators of the success of each company. As a rule, the monetary values are used to indicate the performance of the business on the one hand, and the resources spent on the other, although they can be expressed in both natural and financial indicators. [18]

Cost-effectiveness is usually expressed in terms of the ratio between the value produced and the value spent, which in practice generally means the relationship between total revenue and costs incurred. [5]

Cost-effectiveness in insurance is expressed by the tendency to achieve the highest possible volume of income (or premium) with the lowest insurance costs (material and intangible costs). Cost-effectiveness, in fact, shows the cost of insurance services provided: [19]

$$CE = \frac{IC}{TR} \cdot 100$$

CE – cost-effectiveness; IC – insurance costs; TR – total revenue.

If the cost-effective indicator of, say, 22.70 is calculated for an insurer, that would mean that out of RSD 100 in total revenue generated RSD 22.70 would be spent on insurance costs.

In pursuit of the principle of cost-effectiveness, as one of the most widely used indicators in the business reports of insurance companies and business research, each insurer's business unit should strive to increase the volume of services provided while reducing costs. This will also make the company more economical, i.e., cheaper as a whole.

## **PROFITABILITY**

Profitability does not only represent the principle of work, but also one of the indicators of the insurance company's business success. Profitable business indicates that the insurer used the funds as a good entrepreneur and earned income that provided coverage for all liabilities: payment of claims, reserved claims, unearned premiums, risk equalization reserves, mathematical reserve in life insurance, contribution for prevention, premium tax, fire contribution, overhead (cost) allowance. At that point, the insurance company accomplished a favourable cash effect – profit.

Hence, profitability as an economic principle is reflected in the endeavour of companies to achieve the highest possible income and profit with as few employees as possible. With this principle, the focus is, much more on the monetary side of business compared to the principle of cost-effectiveness, and especially productivity.

There are several approaches to determining profitability, similar to other economic rules in the field of insurance, here is presented a combined indicator that is determined by comparing the sum of calculated claims and insurance costs with total income, i.e. with the insurance premium: [15]

$$P = \frac{CD+IC}{TR}$$

P – profitability; CD – calculated damage; IC – insurance costs; TR – total revenue.

The profitability of the insurance company's business, for example, of 62.3, which was determined in the above-mentioned manner, indicates that damages and

costs have a joint share of 62.3% in total revenues, which can be considered very favourable.

## CONCLUSION

This paper analyses the key principles that must be esteemed by all insurance companies throughout the business process. The most important characteristics of the following financial and economic principles have been pointed out, namely: security, liquidity, productivity, cost-effectiveness and profitability, as well as the characteristics that arise from their application, and are related to the insurance business.

Namely, managing the risks from numerous policyholders from the economy and the population, insurance companies must ensure that their insurance conditions and risk prices, i.e., premium rates are entirely based on appropriate financial principles, with the initial assumption of using basic scientific postulates and relevant statistical and mathematical factors. Fundamentally, the achievement of the investigated indicators is based on the achieved and maintained broad range of insurance and the proper collection of premiums, as well as on the collection of parts of reinsurance and coinsurance indemnities.

The consistent implementation of all the principles discussed has been monitored by the insurance companies themselves, but also supervised by the supervisory authority of the state, the National Bank of Serbia, since the beginning of the 2004 Law on Insurance implementation. By enacting by-laws regulating security, liquidity and other principles, the National Bank of Serbia assists insurance companies to operate in the general interest.

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