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INSURANCE COMPANY RISK MANAGEMENT SYSTEM IMPROVEMENT

REVIEW ARTICLE

Abstract

In modern business environment, insurance companies are an important factor of financial market development of overall economic and industrial progress of the country. If we assume that the key determination of every insurance company is to increase the competitiveness of its insurance services, increase its market share and profit realization, the question is how to most efficiently achieve these, often conflicting, objectives.

In addition to the traditional approach to increasing insurance portfolio and, consequently, the total insurance assets, a basic requirement of better positioning of insurance companies in the market is proper management of all risks which the Insurer is facing in his business, not only those assumed from the Insured. That is why the subject of this paper is a set of risks that affect the activities of Insurers. These are primarily insurance risks, liquidity risks, counterparty default

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risks, market, operational, legal and other significant risks. Application of the VaR model for measuring market risk is the most common and is yet to demonstrate its effectiveness with other risks in future.

Key words: *risk, risk types, risk management, VaR model, Solvency II, insurance premium.*

1. Risk Management System Improvement

1.1. Risk Concept, Management Objectives and Importance of Information System

The growing internationalization and concentration of insurance business activities and/or the emergence of new and dispersion of existing risks impose the need for a clear definition of risk management policies in each insurance company. Risk is a probability of negative effects on the business and financial results and position of the insurance company, whereas risk management is defined as the process of risk identification, measurement, assessment and control. Risk is also a possibility that something will occur that will affect negatively the set goals. It is estimated by considering the consequences and probability of realization[2]. The following definition shows that risk is the possibility of an occurrence with adverse effects upon the achievement of set goals. Risk management (*risk control*) generally involves a set of techniques and methods for reducing the loss frequency and severity. Four methods, nevertheless, are dominant: avoidance, acceptance, decrease and distribution of risks. In the first case, we annul the risk by avoiding the exposure to potential future negative events; in the second, we keep the risk at an acceptable level; in the third, we decrease the risk by relevant policies and procedures; in the fourth, we transfer the risk (partially or totally) to other insurers (co-insurance) or reinsurers (reinsurance). In selecting the appropriate method, one should certainly consider the costs of applying and the potential increase of some other risk.

Risk management in an insurance company can be defined as a process which allows the occurrence of particular events influencing the objectives, keeps the risks within the tolerance limits and allows for a rational realization of defined objectives.[3]

The importance of the process of risk management in an insurance

[2] Global Framework for Insurer Solvency Assessment, A Report by the Insurer Solvency Assessment, 2004, pp. 26

[3] Enterprise Risk Management – Integrated Framework: Executive Summary and Framework, Annual Report, 2004, pp. 16.

company is best illustrated by the new insurance regulatory and control regime in the European Union, in force since 01.01.2016, better known as Solvency II. Solvency II requires that insurance companies have effective risk management system comprising strategies, processes and procedures for the regular risks detection, measurement and monitoring, risk management and reporting of actual or possible risk occurrences and their interdependence. Solvency II introduces the calculation of solvency capital requirement (SCR) based on all major risks to which the insurance company is exposed, not just the risk assumed from the insured.

A new business philosophy of insurance companies is emerging, meaning that the capital represents a second line of defence against insolvency, while the first line seems to be appropriate risk management[4]. Directives on the minimum capital requirement and/or the insurance control, protect the policyholder's interests, but not the interests of the Insurer. The Insurer may protect his own interests primarily by adjusting his risk appetite and the expected gain to the level of capital he is actually willing to expose.

The risk management process comprises a wide range of activities and requires knowledge of various insurance areas, such as the skills of actuaries, finance specialists, internal auditors and many other experts. Defining goals under such conditions is not easy; it sublimates a series of following measures:

a) the creation of conditions and prerequisites for reducing risk to an acceptable level that does not jeopardize the assets and business of the Insurer;
b) analysing all key factors and elements that allow directing the financial, human and other resources in a way which provides for maximum possible risk distribution and minimization;
c) realization of business objectives, strategies and operational plans of the Insurer;
d) improvement of services and protection of interests of policyholders and beneficiaries;
e) transparency and public availability of risk information;
f) developmental policy of the Insurer in accordance with business opportunities;
g) providing a competitive edge;
h) maximizing profit and minimizing potential losses and adverse effects on the financial result and capital of the Insurer.

Therefore, it is necessary to invest into additional training of all employees if we are to have a risk management culture that will be required under the Solvency

[4] Global Framework for Insurer Solvency Assessment, A Report by the Insurer Solvency Assessment, 2004.

II regime; today already, if an Insurer wishes to achieve the best possible rating[5] and higher scores, he needs to cooperate with the rating agencies of developed EU insurance markets.

The information system is a very important part of the risk management process. Its adequacy is reflected in the provision of data for timely and continuous risk measurement, monitoring, adjustment and reporting. Valid system is necessary for making the right risk management decisions. The system should correspond to the volume, type and complexity of the Insurer's business and be flexible enough to solve various potential problems.

Timely reporting allows for comparison between the actual risk exposure and predefined limits, assessment of the condition and changes and/or the creation of the assumptions to be used in risk management. Financial and business data as well as the information on compliance with internal and external regulations and the market events, which are used in the process of decision-making, must be reliable, timely and available. Compliance with the requirements, the accuracy and validity of the information intended for internal and external users is to be provided for by the persons who are reporting. The bottom line of this process is to adopt the adequate strategies by being supplied the quality information for optimum decision making regarding the acceptance of particular risks and to streamline the technical, financial and human resources in a way that ensures the greatest possible risk diversification and minimization. In addition, being well-informed is essential for the development of an adequate risk management culture at all levels and with the participation of all employees. The establishment of a comprehensive risk management process takes three to five years, but the results are visible after only one year.

1.2. Process of Risk Identification, Measurement, Assessment and Control and Application of VaR Model

Risk identification involves the mapping of individual risks to which the Insurer may become exposed in his business, that is, the formation of the matrix to identify events which represent sources of individual risks. In addition to the group risks, subgroups and individual risks, the Insurer must monitor risks by lines of business (non-life and life insurance). The Insurer measures the risk by a qualitative and quantitative assessment of the identified risks and events, classifying risks according to the level of their effect. The risk management system is based on the

[5] There are five companies in the world which provide the rating for insurance companies, on a global level: A. M. Best, Standard&Poor, Moody, Fitch i Weiss. They provide both short-term and long-term rating assesments. Short term assesments take into consideration the current market exposures, regional cat events and financial losses which may lead to insolvency.

development of internal methodology (internal approach) and the requirements of the regulatory body (regulatory approach). The level of risk is assessed on the basis of the severity of potential adverse events and/or their effects and the probability and frequency of occurrence.

In close cooperation with the Actuarial Department and by systematic collection and permanent analysis of the risk data, the Insurer manages his solvency risks, in particular, the risk of capital adequacy, structural mismatch between assets and liabilities, security maintenance and yield of capital structure, client creditworthiness, technical and guarantee reserves coverage as well as the risk of adequacy of obligations.[6]

In the process of monitoring and control of market risks, the Insurer applies *Value-at-Risk* model (hereinafter: VaR). In recent years, it can be encountered as a possible, but still not sufficiently used method in measuring operational risk.

It should be noted that in the past, risk management was reduced to simply setting the risk limits, for example in terms of the number of open positions or permitted gap in the maturity of financial instruments. Over time, this type of control has become inefficient in several areas. In particular, the limits technically created the possibility of reducing the risk at the one hand, but also of increasing it at the other hand. Also, sometimes a desirable risk was eliminated for breaching the allowed limits. It is believed that the biggest problem was the lack of consistent policy for setting the limit and the tolerated amount of potential loss. It was found that the management did not need the structure of the available positions but only the information of loss that could result from the specific portfolio structure and the probability of its occurrence. In other words, the schedule of probability of losses is essential to the management. The effort to ensure an adequate measure that would in a way consider the schedule of probability, created the idea of the VaR model.[7]

VaR represents the loss that will not be exceeded in a given time range and with a certain level of confidence, summarizing the risk of losses arising from the market risk factors variation. VaR allows the comparison between the exposure of various financial instruments and portfolios. To minimize the risk of false results that would be obtained by using the VaR model, the Insurer uses the stress tests in order to adequately assess the impact of hypothetical adverse events on the value of the portfolio, that is, ensure adequate assessment of potential economic losses under extreme market conditions. One should be very careful when interpreting this definition and pay attention to a few facts:

1. VaR is only an estimate of a possible loss, meaning that it is determined on the basis of statistical methods and models, against a set of assumptions about

[6] Risk management policies of Dunav Insurance Company, internal document, 2011, pp. 36.
[7] Branko Urošević, *Value at Risk*, Faculty of Economics in Belgrade, 2010, pp. 47.

the stochastic processes that are used to describe the trends of market volumes and the schedule of probability of return on financial instruments;

2. The share of portfolio positions is fixed, meaning that VaR only allows us to assess the potential loss only if the portfolio structure does not change;

3. VaR is always calculated with regard to a period and in that case, the value itself speaks about potential losses in a given time horizon;

4. Since this estimate is made with a certain degree of confidence, we can only speak of the estimated loss as potential, but not as certain.

It is wrong to claim that if the daily VaR is one million Euros (€)[8], with a level of confidence of 95 percent, the maximum possible loss in the next day of an insurance company will amount to exactly one million euros. The maximum possible loss includes the total value of portfolio of a given Insurer but the probability of the occurrence of such an event is negligible. The only thing we can claim on the basis of the obtained measure is that the next day's loss sustained by the institution shall not exceed the amount of one million euros, in 95 per percent of cases. If the adopted model for calculation is correct, it means that a loss exceeding the value of a daily VaR is possible to happen in five out of 100 days. As you can see, the concept of VaR is based on several assumptions the realization of which is questionable and which are most criticized aspect of this approach. The first assumption concerns the form of stochastic process which we believe is essential for the key values (price and/or yield) trends in the financial markets.

The second assumption relates to the fixed participation of financial instruments in the portfolio for which VaR is calculated. This is possible to claim only for short time intervals, whereas the assumption is practically unsatisfied as the horizon for which VaR is calculated extends. In such circumstances, the positions which shall become due in the obtained period must be redefined as well as the trading rules.

When calculating the VaR, one can chose two parameters in the model so as to better respond to the risk management demands. The time span for which this measure is calculated and the level of confidence can be chosen arbitrarily. For the purposes of regular risk management, VaR is commonly determined on a daily or monthly basis, although, according to the periodicity of reporting and/or investment horizon, one may choose some other time frame, for example quarterly. In exceptional circumstances, when reporting to the external entities (national supervisory authority, in particular), the time frame for making the loss assessment and the accordingly stated capital requirement is stipulated under the legal framework. For this purpose, a ten-day VaR is calculated. Confidence interval

[8] Also as € in the text below.

is the second parameter elected by a financial entity. If the aim of an insurance company investing into securities is to provide a high credit rating or a low probability of insolvency, very high levels of confidence are used. When it comes to determining the capital requirements (which sometimes amount to 99.7 percent), the assessment of the potential loss allows for a very low probability of possible unforeseen portfolio value reductions.

There is a slightly less restrictive approach of a company trying to set the operational limits and adopt the policies, accordingly, which would regulate the institutional securities trading. In such cases, the confidence level is usually 95 or 99 percent (Basel II) and/or 99.5 per cent under the Solvency II. Of course, there is no universal best method to calculate the VaR, but the choice of method depends entirely on the specific investment policy of the Insurer.

1.3. Risk Types and Classification

In the course of their regular business, the insurance companies are faced with a series of individual risks. The risks can be grouped according to various criteria, financial or otherwise, dynamic and static, measurable and immeasurable, clean and speculative, commercial and financial, objective and subjective. These and similar risk classifications are just different theoretical approaches to risk and as such do not provide for a clear attitude towards the risk management issue. The International Association of Insurance Supervisors (IAIS)[9] classifies the risks into:

- technical,
- investment and
- non-technical.

A far more interesting risk classification has been provided by the International Actuarial Association (IAA)[10], classifying the risks into the underwriting risks, market risks, credit risks, operational risks, liquidity risks and environmental risks. There is also a classification into the risks of assets and liabilities. However, if we sublimate all previous domestic and global experience, we see that there is no uniform and generally accepted classification of risks that would be appropriate for all insurance companies.

Therefore, we can define the following most common risk groups to which Insurers are exposed:

a) insurance risks *(underwriting risks)* – derived from the insurance contract;
b) counterparty default risks;
c) the liquidity risks;

[9] IAIS (International Association for Insurence Supervisors), *www.iaisweb.org*
[10] IAA (International Actuary Association), *www.iaaweb.org*

d) market risks connected to the price volatility of the financial instruments;
e) operative risks;
f) legal and other significant risks.

1.3.1. Within the group Insurance risks, the following risk subgroups are particularly managed:

1.3.1.1. risk of inadequate calculation of technical reserves;
1.3.1.2. risk of inadequately determined insurance premium (the price);
1.3.1.3. risk of inadequate assessment of the assumed risk;
1.3.1.4. risk of inadequately defined self-retention or assuming the risk in excess of the self-retention;
1.3.1.5. risk of the unharmonized, unadjusted, and economically adverse tariff policy of the Company, regarding the space and time dispersion of the assumed risks;
1.3.1.6. risk of the inadequate determination of insurance premium structure;
1.3.1.7. risk of the inadequate determination of general, special, additional or individual insurance terms and conditions.

1.3.1.1. Managing the risk of inadequate calculation of technical reserves covers the risk of:

- inadequate statement of unearned premium;
- inadequate calculation of reserved outstanding claims;
- inadequate calculation of reserved incurred but not reported claims;
- inadequate calculation of risk balancing reserve;
- inadequate calculation of mathematical reserve;
- change in frequency of the mass and catastrophic damages;
- inadequate planning of technical reserves.

Management of the risk of inadequately stated insurance premium is done in order to limit the possible losses. The starting point for this is the underwriting result and the changes in loss expectancy, but other elements are also taken into consideration, as well as the level of tariff on the insurance market.

Risk assumption and the Insurer's capability of sustaining the taken risks with its technical and financial capacities, implies adequate technical and guarantee funds on one hand, and establishing of the optimal structure of deposits and investment of these funds on the other hand, as well as proper return from the deposits and on investments. The calculation of the retention amount and/or maximum liability which the company can or is allowed to keep, i.e. which it can cover with its own available funds, without jeopardizing own risk balance and current liquidity, is also connected to many risks. The retention is one of the key factors in allocating the risk which should be passed to Reinsurer, and/or the risk

portions which shall be kept. The risk [11]appears when the level of retention is set too high or too low.

The key factors for determination of the risk portion which the Insurer shall keep for himself, are solvency, financial strength and technical capacity of the Insurer. Financial capacities primarily comprise the Insurer's available reserves, more precisely the volume and structure of the property and financial means, while technical capacity is defined by homogenity of the group of risks from the Insurer's portfolio.

In order to calculate the amount of retention as precisely as possible, the Insurer starts from the gross annual pure insurance premium, the underwriting result, the security loading rates, the amount of the technical reserves, the total amount of the loss expectancy, the maximum possible loss, the sum insured, the level of dispersion of the insurance portfolio, as well as other specific elements directly conditioned by the lines of insurance and the risk.[12]

1.3.1.2. Management of the risk of inadequately determined insurance premium (the price) includes:

- risk of the inadequately determined amount of the pure premium rate (higher or lower) and the rate of the expense loading;
- risk of the inadequately agreed insurance premium, considering the tariff and principles of underwriting, the risk of inadequately applied bonus-malus system.

1.3.1.3. Management of the risk of inadequate risk assessment of the assumed risk includes:

- risk of the inadequately defined type, purpose and characteristics of the object;
- risk of the inadequately defined degree of peril for particular risks;
- risk of the inadequately defined maximum possible loss;
- risk of the inadequately estimated prevention system, inadequately agreed prevention and loss mitigation measures and inadequately directed means.

1.3.1.4. Management of the risk of inadequately defined self-retention or assuming the risk in excess of the self-retention includes:

- risk of the wrongly defined retention level;
- risk of the mismatch between the insurance and reinsurance premium;
- risk of non-reporting risks into reinsurance and the risk of non-transferring of the risks in excess of the self-retention into reinsurance or coinsurance.

[11] George E. Rejda, *Principles of Risk Management and Insurance,* Addison Wesley, New York, 2005, pp. 453.

[12] Jelena Kočović, Predrag Šulejić, *Osiguranje*, Faculty of Economics Belgrade, Belgrade, 2002, pp. 119

1.3.1.5. Management of the risk of the unharmonized, unadjusted and economically adverse tariff policy of the company, regarding the dispersion of the assumed risks, includes:

- risk of insufficient diversification of the insurance portfolio and/or risks of the inadequate tariff policies regarding dispersion of the taken risks;
- risk of general cost allocation per functional sublayers, tariffs, lines of insurance and segments.

1.3.1.6. Management of the risk of the inadequate determination of the insurance premium includes:

- risk of the inadequate insurance premium structure;
- risk of the inadequate loss ratio and combined ratio.

1.3.1.7. Management of the risk of the inadequate determination of general, special, additional or individual insurance terms and conditions includes:

- risk of the mismatch between the insurance terms and conditions and premium tariff;
- risk of the mismatch between the insurance terms and conditions and the regulations of the competent body;
- risk of the inaccurately defined insurance terms and conditions, insurance subject matter, insured risk, risk of exclusion and limitation of Insurer's obligations.

1.3.2. Risks of Counterparty Default

Within this risk, the Insurer pays special attention to:

1.3.2.1. the risk of technical reserves coverage and the risk of inability to collect the deposited and invested funds (credit risk).

The credit risk is the possibility that the debtor (the Insured or the Issuer of the equities) shall not fulfill the contractual obligation into which technical reserves or guarantee funds have been invested; it is the risk that the debtors shall not be willing or capable of meeting their balance sheet and off-balance sheet obligations towards the Insurer.[13]

The company can efficiently determine the average amount of the expected losses under the credit risk, but it must always count with the unexpected losses which are measured by the actual losses deviating from the expected ones (defined on the ground of time series based on experience data). In mathematical sense, expected losses (EL) are the product of the exposure at default (ED), the probability of default (PD) and loss given default (LGD). The probability is defined

[13] Joel Bessis, *Risk Management in Banking,* John Wiley&Sons, England, 2006, pp. 256.

on the ground of frequency of default regarding claims with similar risk indicators.[14]

Every aggravation of the credit risk directly implies the decrease in the market value of the Insurer's assets, and thus the inadequate solvency and liquidity of the Insured, as well as of the Issuer of the equities. The calculated technical reserves coverage is analyzed from the aspect of the limited depositing and investment, specified by the regulatory body (in our case, the NBS), demands of the relevant international accounting standards and international financial report standards, considering actual and expected return on investment and according to the risk dispersion requirment. Continuous monitoring of the possibilites of the investment of technical reserves into particular financial insturments (shares, bonds, equties...) and property forms is necessary, starting from planned amount of the insurance premium, indemnities, the amount of the loss reserves, mathematical underwriting reserves, share of the reinsurer and coinsurer.

Adequacy and sufficiency of the amount of the Insurer's technical reserves shall always be accompanied by the analysis of the deposits and investments of the funds of technical reserves, which in the end results not only in the adequacy evaluation of calculated technical reserves, but also in the evalution of the property and capital risk sensitivity and flexibility.

The aim of the risk management in the equities business is to limit possible losses due to change in value of holder's and debtor's securities. The equities portfolio is controlled and monitored through the estimation of the quality of the equities issuer, analysis of the term structure, currency structure and interest rate and/or proceeds from the equities, as well as the analysis of the trends of the prices on the equities market.

In order to minimise the risk of deposits and investments of the calculated insurance technical reserves and guarantee funds, timely disclosure and availability of information is very imortant, as one of the key risk factors in the management of the assets and liabilities.

The information should contain:

- situation and trends on the capital market;
- actual and projected gross and net proceeds from equities;
- proceeds from investment property, as well as actual and projected costs of the regular and investment maintenance of property;
- actual and projected costs concerning deposits and investments of the insurance funds.

1.3.2.2. The concentration risk covers the risk of exposure to one legal entity or to the group of associated entities, exposure to the associated entities, the risk of the investment concentration into certain property forms

[14] Dejan Drljača, *Managerial Accounting as Framework and Instrument of Assets and Liabilities Risk Management in Insurance Companies*, Cultural Centre Mladenovac, 2011, pp. 140.

and the risk of the inappropriate dispersion of the insurance portfolio. The exposure is prominent if the amount of deposited and invested technical reserves exceeds regulated total percentage of deposit and investment limitation in certain property forms or permitted percentage of investment into equities of one issuer.

In order to minimise the concentration risk (in accounts receivables, capital shares, investment properties, bank deposits and other forms of property) and the risk of lack of coverage for technical reserves, the Insurer is obliged to provide proper dispersion of the deposit and invested funds of technical and guarantee reserves, to project expected deposit and investment proceeds regularly and consider expected trends on the capital market and constant analysis of the insurance portfolio structure.

1.3.3. Within the group of the liquidity risks, following subgroups are specificly managed[15]:

1.3.3.1. Solvency risk;
1.3.3.2. Risk of liquidity, the risk of the term mismatch between assets and their source and the risk of impossibled debt settlement;
1.3.3.3. The risk of inadequate property, liability and costs management;
1.3.3.4. The risk of impossibility of selling the company's property at the book value, as well as being unable to collect the proceeds of sale of such property;
1.3.3.5. The risk of wrong estimation, recording, presentation and disclosure of the property value and the Insurer's soruces of funds, as well as their income, expenses and results.

1.3.3.1. Solvency risk management includes:

- the risk of the structural mismatch between assets and liabilities, the risk of property quality and the risk of unsatisfactory proceeds from the invested guarantee funds;

- the risk of the capital adequacy and maintenance of the long-term security.

When testing capital adequacy, technical reserves and guarantee funds are determined, solvency margine of life and non-life insurance is calculated-all for the investment of reserve, and additional increase of funds. By investigation and analysis of the amount and structure of the technical reserves and guarantee funds (in total and according to the lines of insurance) and by quantifying functional relations between certain deposits and investments of the technical reserves and guarantee funds, the objectives are attained and the risk

[15] Ostojić, S, *Insurance and Risk Management*, Data Status, Belgrade, 2007, pp. 39.

management efficiency is enhanced. The risks are not exhausted only by demand for achivement of the current liquidity and creating assumptions for fulfillment of regulating demands and limitations under the by-laws of the National Bank of Serbia, but they should finally contribute to maximize the profitability and use the Insurer's business capacities in more efficient manner. The solvency risk, by general definition, measures the capability of the company to carry out its obligations towards the Insured before the maturity date. This risk is defined by a number of various factors. First of all, the adequacy of the insurance premium, structural mismatch between the assets and liabilities, the quality of the property, sufficiency of the technical reserves and guarantee funds, and the structure of the investment for their coverage.

1.3.3.2. Managing risks of liquidity, maturity mismatch of assets and their source and failure to meet the obligations include:

- The risk of liquidity and maturity mismatch of assets and their sources;
- The risk of failure to meet insurance and other obligations.

The main objective of Insurers in managing liquidity risk is to maintain their exposure at a level that does not threaten the business and ensures the creation of prerequisites for proactive and preventive approach to liquidity risk identification, measurement, assessment and control.

It is necessary to provide structural and maturity compliance between the assets and liabilities, the estimation of future cash flows and permanent monitoring of all information on the cash and capital markets development in order to overcome any liquidity issues. The group of less frequent risks includes the risk of inadequate management of assets, liabilities and the coverage expenses[16], the risk of being unable to sell the company's assets at book value, the risk of inability to collect funds after the sale of assets[17], the risk of wrong assessment, recording, presentation and disclosure of the value of company assets and resources, as well as its income, expenses and results[18].

1.3.4. Market Risks

In modern business environment, the insurance companies must base their activities, organization and business concept on adequate evaluation of potential losses. It is necessary to continuously manage the risk portfolio so that

[16] Covers the risk of inadequate management of assets and liabilities, risk of inadequate cost control and risk of lacking sources for covering the insurance operating costs (hereinafter: the operating costs).
[17] Covers the risk of being unable to sell the equities at book value and collect proceedings from sale, risk of impossible sale of real property at book value and of being unable to collect the income from sale.
[18] Covers the risk of implementation of International Financial Reporting Standard 4 – Insurance Contract – and the risk of wrong admittance, evaluation, recording, presentation and disclosure of assets and their sources, as well as income, expenditure and result.

the company may, at any moment, have available capital to defend the principle of solvency.[19]

This means that insurance companies need to continually analyse the environment and search the market, i.e. collect the information relevant for decision-making, identify any potential sources of external perils and create strategies for market penetration on the basis of collected information and the results of analysis.

Under the terms of the previous paragraph, Insurers must have at their disposal all the information about the economic, legislative and judicial, political, demographic, cultural and other factors that may have a direct and indirect effect on the insurance industry. Particular attention should be paid to the direction of change of those elements in terms of inflationary trends, fluctuation of the exchange and interest rates, changes in regulations and growing competition which are the sources of instability.

By continuous market research, the companies gather the business relevant information, thus identifying the most important elements that can have a negative impact on their business operations.

Analysis of the market risk primarily includes the risks resulting from unfavourable trends and tendencies in two markets in which the insurance companies actively participate. On the one hand, it is the insurance market, where services are launched and income generated, and on the other hand, it is the financial market, where free funds of technical and guarantee reserves are placed for the purpose of their further capitalization. This market serves for business transactions with financial instruments, for the sake of raising capital.

Despite the negative effects of the global economic crisis, the world insurance market continually strengthens and contributes to the improved services and more adequate fulfilment of the needs of the insured.

Within the group of market risks, the Insurer is obliged to carry out the identification, measurement and assessment of the following individual risks:[20]

a) risk of uncompetitive prices and unfair competition;
b) risk of inadequate adjustment to customer requirements and the risk of lack of competitiveness from the perspective of the scope of coverage;
c) exchange rate risk;
d) risk of changing interest rate;
e) equity risk and risk of failure to realize the collateral;
f) property risk.

[19] George E. Rejda, *Principles of Risk Management and Insurance*, Addison Wesley, New York, 2005, pp. 7.
[20] Pero Petrović, *Risk Management on Capital Market*, Institute of Economic Sciences, Belgrade 2000, pp. 149.

a) The risk of uncompetitive prices and unfair competition.

Every Insurer observes the market risk and competition risk manifestations when positioning on the insurance market, comparing their own performance indicators with that of other insurance companies and the industry average.

Multiple instruments are applied to evaluate the market positioning, primarily comparative analysis of the amount and structure of technical and guarantee reserves, capital adequacy, liquidity, structure of assets and coverage of certain parts of the property, management indicators and the need for additional sources of funding. The conducted analyses include the economic business principles, portfolio structure of deposited and invested funds of technical and guarantee reserves, profitability, technical result as well as retained premiums and claims. Creating a tariff and/or determining the level of the premium based on assumptions that take into consideration only the elements and rules of actuarial profession can be misleading and unreliable. It is necessary to include market factors when creating a tariff, because the lower prices of services can help achieve a more favourable market position and increase a market share, but also bring the company into danger of excessive risk exposure.

Indirect control is also important and is achieved by informing the public and potential Insured via the web presentation of services and service packages that are offered by the Insurer, the insurance terms and conditions, rights and obligations of the Insured and other important elements. The risk of uncompetitive prices and unfair competition is minimized by introducing new services and insurance packages which the competition is lacking, raising the value of services and adjusting the tariff system in accordance with the previous analysis of the actual technical and financial results. Simultaneously, the Insurers are forced to adapt their tariffs to competition, apply the underwriting approach to offer creation (sometimes even breaching the rules of profession) for the sake of increased market share. Lately, services through alternative sales channels are dominant (banc assurance and mass sales channels affirmation).

b) Risk of inadequate adjustment to customer requirements and the risk of lack of competitiveness from the perspective of the scope of coverage;

This risk occurs in the process of negotiation and conclusion of insurance contracts and the investigation, assessment, settlement and indemnity procedures (risk of inefficient settlement and indemnity and the risk of inadequately calculated amount of loss or sum insured).

c) The currency risk is understood to mean the probability of actual negative effects on the financial result and capital of an insurance company due to changes in the value of the foreign exchange rates. All foreign currency assets and liabilities are exposed to currency risk, as well as claims and liabilities indexed in a foreign currency.[21] The Insurer manages the currency risk in order to limit

[21] Emmett Vaughan, Therese Baughan, *Basics of Insurance and Risk Management*, Mate, Zagreb, 2003, pp. 44.

potential losses due to foreign currency fluctuations and maintain the risk at a level acceptable from the perspective of the business results, capital adequacy and liquidity preservation requirement.

If we invest liquid assets in various forms of foreign currency property, whereas the liabilities due also have the foreign currency character, the changing value of foreign currencies against the local currency will, of course, affect the overall returns on investment when such investments are reconverted into the local currency, as well as on the amount of liabilities. This risk is not only associated with direct foreign currency liabilities of Insurers (for the reinsurance coverage and/or mathematical reserve calculated in foreign currency) but with the dinar liabilities that may have hidden foreign currency component regarding the indemnity liabilities when writing the MTPL policies. The currency risk is also related to the risk of devaluation of the exchange rate of the national currency (for insurance concluded without a currency clause, when the premium is paid in instalments and in the case of holding funds in dinars), the risk of dinar appreciation when the Insurer holds assets in a foreign currency and/or the risk of falling foreign currency exchange rate in which the company holds assets in the cross-currency market. Risk management is carried out by various forms of financial derivatives such as swaps and forwards. A good way to relativize the risk is prevention through currency portfolio diversification.

d) The interest rate risk is understood to mean the probability of incurring losses due to interest rate fluctuations. The interest rate risk arises from the level of interest rates that determine the cost of using credit and cash resources on the financial market and the yield on investments of calculated technical reserves and guarantee funds of Insurers. Interest rates are determined according to the ratio between supply and demand of financial resources in the financial market, as well as inflationary or deflationary tendencies. In the process of identifying the interest rate risk, the Insurer monitors transactions that are used for depositing and investing in short-term resources in the form of long-term assets and long-term resources in the form of short-term effects, constantly keeping in focus the horizontal and vertical alignment of assets and liabilities.

Interest rate fluctuations may significantly influence the reduced profitability and liquidity of the company. A company is exposed to the interest rate risk in two cases. In the first, due to the increased interest rates on borrowed sources of funding and in the second, due to the decline of interest rates on funds invested in company portfolio equities. In terms of price growth, the demand for liquid assets will increase whereas the supply will decrease, because of the lender's risk that his real cash return will be less. Therefore, the expected inflation rate is increased by a particular percentage value, so that the real interest rate is the actual difference between the nominal interest rate and the inflation rate. In addition,

equity prices are inversely proportionate to the interest rate fluctuations, which is why the interest rate limit largely determines the level of risk.[22]

e) Equity risk and risk of failure to realize the collateral arises form the result of exchange and over-the counter markets fluctuations and includes the risk of falling prices of company portfolio equities as well as the risk of falling prices of equities of the company itself.

Any fluctuation of interest rates also changes the income from deposits and investments of technical and guarantee reserves of the Insurer, as well as the current value of cash flows. The risk of falling equity prices is particularly evident in the insurance companies that have not diversified their investments and do not comply with proper accounting standards.

f) Property risk is the risk of falling values of property from the company portfolio in general or in specific areas where the company operates. The company analyses the factors such as the property offer and demand ratio, location and microenvironment, standard of living and tax policies in the field of real estate. The company observes all factors that directly or indirectly influence the property prices and acts in accordance with its principles and regulations. When we talk about the risk of investment property price fluctuations, either independently or depending on the risk of prices downfall, we should bear in mind that the income from rentals can also reduce. Consequently, such a scenario will negatively affect the performance of the company. The importance of this segment of the overall market risk is perhaps best illustrated by the fact that it was the collapse of the US real estate market which initiated the global economic crisis in 2008.

1.3.5. Operational Risks

The operational risk is understood to mean the risk of negative effects on financial result and capital of Insurers due to employees' omissions, inadequate internal procedures and processes, inadequate management of information and other systems and unforeseeable external events.

Within the group of operational risks, there are the following risk subgroups:

a) the risk of inadequate organization of work and the risk of inadequate election, appointment and scheduling of both management and immediately performing employees;
b) the risk of wrong and economically adverse contracting, including the risk of fraud, abuse and other illegal acts;
c) IT and biased reporting risks;

[22] Dejan Drljača, *Managerial Accounting as Framework and Instrument of Assets and Liabilities Risk Management in Insurance Companies*, Cultural Centre Mladenovac, 2011, pp. 183.

d) the risk of contracting, organizing and carrying out business activities contrary to the rules of profession;
e) the risks related to the treatment of employees and workplace safety;

The objective of operational risk management is to record the adverse event immediately upon occurrence, analyse it and take preventive measures against its reoccurrence. Losses related to the inadequate job organization are due to delays in the realization of business transactions and document flow, failure to meet deadlines or exceeding authorities, accounting errors, inadequate reporting, failure to provide insurance services to clients and external partners.

Losses arising from risk of bad scheduling of employees and losses related to the treatment of employees and workplace safety arise from positions that are not in accordance with the employment contract. Errors can result in termination of employment, adjustment of salary, discrimination of employees, jeopardizing their health and safety. The losses may also result from inadequate number and qualification of staff, lack of motivation, lack of necessary knowledge and experience and violation of the employee rights. Losses may occur in connection to the incorrect or inadequate advice on choice of insurance services, as well as unintentional errors in actuarial modelling of these services.

The risk of wrong and economically adverse contracting, fraud, abuse and other illegal acts refers to the losses resulting from dolus malus and malicious acts and omissions of at least one employee, with the intention to obtain personal benefit. The risk of external fraud and activities covers the losses from deliberate, prevailingly malicious, acts of third parties. As such, it includes deceit, abuse, evading the law and breaching bylaws.

The risk of contracting, organizing and carrying out business activities contrary to the rules of profession covers the losses caused by the unintentional acts or omissions in providing professional services to customers, the losses resulting from inadequate services and business practices as well as the losses from relation with business partners, clients and suppliers. The risk of IT and the reporting segments inadequacy include the losses due to unavailability, defects and inefficiency of the information system, as well as the losses arising from the malfunctioning hardware or software, structural inadequacies and deficiencies of telecommunications. The losses from actual IT risks occur due to inadequate capacity, excessive development expenses and exceeding the deadlines in the IT system development.

1.3.6. Legal and other Significant Risks

As part of legal risks, the companies monitor the following risks: of imposing measures and penalties by the NBS and/or sanctions by another

competent authority, of non-compliance of business deeds, of the implementation of regulations governing the insurance industry, of lost lawsuits for damages and property disputes and of the recourse claims collection. The Insurers manage the non-compliance of business with the laws and other regulations and propose measures to minimize the risk by performing the analysis and verifying the adequacy of prescribed procedures.[23] The risk of money laundering and terrorism financing in life insurance is especially monitored.

Within the group of other significant risks, the following risk subgroups are monitored:

a) the strategic risk and inability of the insurance company to implement strategies and business plans and/or define the business objectives.
b) the risks regarding the introduction of new products and activities related to the processes and systems within the company;
c) the risks related to tasks delegated to third parties;
d) the risk of employee education;

Activities of Insurers on minimizing strategic risks must be in the function of providing and maintaining a good reputation in the insurance market and retaining the confidence of the Insured, the owner of the capital and other creditors. The negative effects of the global economic crisis have also prompted a more comprehensive and thorough understanding of the risks that the Insurers face in their business.

Table 1: Survey of Global Insurance Premium Trends in 2010–2015 (in billion dollars)

Global Insurance Premium Trends in 2010 - 2015						
Year	2010	2011	2012	2013	2014	2015
In Billion Dollars ($)	USD ($)	USD ($)	USD ($)	USD ($)	USD ($)	USD ($)
Life Premium	2,520	2,627	2,621	2,608	2,655	2,534
Non-Life Premium	1,819	1,970	1,992	2,033	2,124	2,020
Total Global Insurance Premium	4,339	4,597	4,613	4,641	4,779	4,554

Source: www.swissre.com, world insurance report 2010–2015[24]

However, the indicators of the global insurance market in the period from 2010 to 2015 (Table 1) record a slight recovery trend of the world's total insurance premiums, with the exception of 2015 when, due to the depreciation of dollar, the premium was on a slightly lower level than in the previous year. The positive

[23] Dejan Drljača, *Managerial Aaccounting as Framework and Instrument of Assets and Liabilities Risk Management in Insurance Companies,* Cultural Centre Mladenovac, 2011, pp. 189.
[24] Swiss Re Sigma Study (World Insurance Report 2010–2015).

trend is expected to continue in 2016. Similar trends are recorded in both the EU countries and Serbia.

What is certainly evident is changed economic environment characterized by the fact that it is more difficult to find the solvent Insured and thus ensure the collection of insurance premiums, regardless of the line of business. Faced with the fact that it is increasingly difficult to collect funds through premiums, Insurers must take all the steps to annul or, at least, minimize the risks they are exposed to in their business

As much as this process is complex and encounters a misunderstanding of both the Insured and the insurance companies, it is nowadays inevitable and imperative if we are to be ready to meet the changes and meet the reasonable requirements for the full implementation of the new solvency regulatory regime for insurance companies – Solvency II project.

2. Conclusion

In the insurance market globalization climate, characterized by a deterioration of economic performance, largely as a result of overcoming the negative effects of the global economic crisis, insurance companies are exposed to permanent impact of decreasing disposable income of existing and potential policyholders. In order to survive in a market characterized by fierce competition and the continuing need for increasing the level of insurance services, Insurers must both use the available financial resources in a rational and cost-effective manner and define a clear policy and procedures for the management of all risks they become exposed to in their business, not just those assumed from the Insured.

Risk is the probability of negative effects on the business and financial result and position of the insurance company, while risk management is a process of identifying, measuring, assessing and controlling the risks. Risk management (*risk control*) generally involves a series of techniques and methods for reducing the frequency and severity of losses. The importance of the process of risk management in the insurance company is best illustrated by the new regime of insurance regulation and supervision in the European Union, in force since 01.01.2016 – the Solvency II project. Solvency II requires of the insurance companies to create an effective risk management system which would include the strategies, processes and procedures for the routine detection, measurement, monitoring, managing and reporting on risks that they have been or could become exposed to and/or their interdependence.

In addition to underwriting risks, each Insurer must focus on the counterparty default risks, liquidity risks, market risks (which show the greatest variability in volatile markets) as well as operational, legal and other significant

risks. System solution for risk management can be realized only in the process of defining the risk management policies and procedures. One of the most reliable tools for quantitative measurement of market risk is the VaR model, which should be applied in measuring other risks as well. All this indicates that a new business philosophy of insurance companies is to be adopted.

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