

MANAGING TECHNICAL RESERVES EVALUATION RISKS

Regulating risk management and proper application of the regulations in practice is extremely important in the insurance companies for the purpose of solvency, stable operations and fulfillment of obligations towards insured in the future.

When we say solvent¹ insurance company, we mean that their asset exceeds its liabilities.

Main task in ensuring solvency is establishment of minimum amount of capital the insurance company has to possess for safe business operations.

Main causes of insolvency² are:

- Insurance risks – technical risks reflecting the level of adequacy of the reserve funds for meeting obligations and covering claims;
- Property risks – investment risks insurance companies are exposed to when investing free assets;
- Non-technical risks – risks caused by actions of the company's management, e.g. decrease in the insurance price because of expansion in the market.

Current valid solvency regulations are based on calculating and maintaining minimum amount of solvency margin, which should enable constant control and monitoring over functional relationship between capital and overtaken risks, pursuant to the first Directive of EU for Non-life insurance from in 1973. Basic Solvency I deficiencies are exclusively quantitative approach as well as the fact that minimum capital requirement is calculated only based on insurance company's obligations. Considering insurance risk only, whilst other risks, such as risk of change in interest rate, are ignored.

Contrary to Solvency I, when calculating Minimum Capital Requirement (MCR) and Solvency Capital Requirement (SCR) pursuant to Solvency II project, all risks of insurance company are taken into account. Therefore insurance risk as well as credit risk, operating risk, market risk and liquidity risk reflect on prescribed amount of capital. This way, higher level of protection for policyholders against unexpected loss is provided. Solvency II concept emphasized the identifying and measuring all risks which might jeopardize operations of the insurance company, as well as taking measures for managing such risks so the company could be continuously able to settle its obligations towards policyholders. During the last few years, a quantity and complexity of risks the insurance companies face have increased. Besides standard operating and financial risks³ (market, credit, liquidity risk, assets and liabilities risk management, etc.), insurance-specific risks are: premium and claims reserves insufficiency risk, reinsurance risk, natural catastrophe risk, etc. Absolute uncertainty within insurance includes whether and when insured event might occur, jeopardizing identification and quantification of the insurance risk as well as their management.

Significance of insurance risk or risk of sufficiency of technical reserves is particularly high within the Solvency II concept since inadequacy of technical reserves has an adverse effect on solvency, that way also on adequacy of the company's equity. Sufficiency of technical reserves has been conditioned by the sufficiency of insurance premium as the source of their financing. Risk of premium and claims reserves sufficiency represent basic insurance risk categories. Risk of premium sufficiency relates to the ability of higher or lower actual indemnification for future claims versus their expected value which is basic element within the structure of the premium. Created reserve for unearned premium can be insufficient to cover future risks, that way jeopardizing ability to pay insured persons' claims. Claims reserves risk means uncertainty regarding future payments for indemnification for occurred reported and occurred unreported claims, not settled yet. Sources of reserves risk are mistakes in the estimation of the amount of reserves for claims and deviations from actual claims in terms of their expected value.

Solvency II aims at creating coherent system for measuring insurance company's solvency based on the scope of offered insurance services, ability to assess all risk they face to and quality of the risk management system.

¹ Kočović J. *Koncept Solventnosti osiguravajućih kompanija – od Solventnosti 0 do Solventnosti 2*

² V. Čolović: *Osiguravajuća društva – Zakonodavstvo Srbije, pravo EU, uporedno pravo*

³ Jeremić Lj. *Ekonomika osiguranja* ³ Jeremić Lj. *Ekonomika osiguranja*

Solvency II represents improved regulations framework due to:

- Introduction of solvency measuring based on risk – level of portfolio risk is measured carefully and required amount of capital is established accordingly;
- Establishment of uniform rules for measuring solvency – both assets and liabilities are valued pursuant to market principles;
- Encouraging risk management – more successful insurance companies in risk management will need less capital to maintain solvency;
- Giving insurance companies the opportunity to define requested amount of capital by applying “internal model” – investing in the development of “internal model” will enable companies operating well to maintain solvency with less capital. Small and medium sized companies, as well as companies that do not have resources for developing “internal model” can use “standard model”;
- Encouraging risk diversification.

Solvency II requires identification of all risks as basis for establishing the solvency, checking if the capital is adequate to risks assumed. Insurance company’s solvency maintaining is a prerequisite for the insurance activity’s contribution to economic stability of the national industry, strengthening the social security and promoting more efficient risk management, particularly in case of natural catastrophes.

The management of insurance company is responsible for overcoming all risks the company faces. Besides the management, it is necessary also to form Risk Committee having the task to establish risk limits and determine controls and activities for establishing the compliance with these limits. Important elements for risk management are as well: overall IT support of good quality, unique business policy, HR stability, development of actuarial methods and techniques, documented and efficient processes and integration of different professional functions within the company in the decision-making process.

On January 1st 2016, application of Solvency II regime will commence in EU countries whilst it will begin later in the countries of our region which are not EU members, but not later than on the date of joining EU. Irrespective of the later commencement of application in the countries of the region, which not applies common EU regulation, Solvency II will still have major impact in our neighbor countries due to:

- Gradual acceptance of parts of EU regulations in local legal frameworks during the joining process,
- Reinsurance, and
- Local insurance companies belonging to groups having EU owners.

Considering the existing functioning of the insurance industry in the region, it will take a lot of investment into IT equipment, integration of IT applications, quality of data and data analysis due to risk individualization. Management of insurance companies will understand better their financial exposure and will have to adjust their investment policies by investing in less risk-bearing and long-term investment having, as a rule, less return. It will result in increase of premium. In addition to increase of need for reinsurance, decrease in exposures to risks will be performed also by changing present insurance products, terminating operations within certain insurance lines of business and introducing new financial instruments, e.g. catastrophe bonds, long-term options etc. under which risk is transferred to the financial market. Solvency II is expected to be an additional stimulus for insurance companies merging on all regional markets.

1. TECHNICAL RESERVES WITHIN SOLVENCY II REGIME

Technical reserves are the major liabilities item in insurance company’s financial statements. At the moment of business books closing, reserves are divided into three main categories:

- Future liabilities based on risk exposure as of the date of estimate until the policy expiry – they relate to liabilities related to insurance for the next period, based on policies under which premium incomes have already been recognized;
- Past liabilities based on period of risk exposure that ended – they relate to liabilities resulting from past events, before business book closing;
- Liabilities based on uncertain events.

Mentioned split has a conceptual character, and the specific types of prescribed technical reserves can differ under different legal regulations.

Existing reserves for risks present insured will be exposed to after the date of estimate include:

- Unearned premium reserves – they are explained by the fact that, in case of non-life insurance, risk exposure usually exceeds the current financial year. Unearned portion of premium transferred to the next financial year aims at covering obligations due to risk exposure after the end of financial year;
- Unexpired Risk Reserve (URR) are calculated based on the estimate of future claims and expenses that will occur after books closing, under insurance policies concluded before such date, over unearned premium reserves.

Solvency II concept terminates both of these types of reserves and introduces significant novelties in the estimation of technical reserves. Estimate structure and methodology are also changed. Some of important changes are:

- Transition to the evaluation of gross and net reserves based on cash flow,
- Removal of all explicit and implicit margins from the calculation of technical reserves aiming at obtaining true best estimate which is defined as the mean of the full range of possible future results,
- Estimating of very low probability extreme events called binary events,
- Reserves for unearned premium are removed and replaced by premium provisions which are assessed under the best estimate method,
- Movement to the recognition of contracts based on legal obligation basis,
- Introducing discounting,
- Introducing the principle of market consistent basis and calculation of risk margin
- Segmentation of risk is performed per differently defined types of insurance,
- Introducing explicitly defined actuary function with specified responsibilities within the requirements for insurance company corporate management,
- Defining explicit requirements relating to quality of information in the insurance company, etc.

Pursuant to Solvency II, technical reserves should equal to value which the insurance/reinsurance company would have to pay in case of transferring own obligations to the other insurance/reinsurance company. It is calculated as a sum of the best estimate and risk margin. The best estimate equals to the average future cash flows which is probability weighted, considering value of money throughout the time (expected present value of future cash flows), using appropriate time structure risk-free interest rates. Risk margin is calculated by determining the cost of providing an amount of eligible own funds equal to the SCR necessary to support current obligations over their lifetime. However, in case when future cash flows tied to insurance or reinsurance obligations could reliably compensate by using financial instruments for which there is visible reliable market value, the value of technical reserves relating to such future cash flows is determined based on the market value of such financial instruments. In such case, no special calculations of best estimate and risk margin are required.

Recognition of the contract based on legal obligation basis that all present signed contracts should be included in the assessment, irrespective whether the date of insurance commencement is before or after the date of calculation. In practice, it means that in the premium reserve are included contracts that are not considered when calculating present technical reserves, e.g. contracts renewed on January 1st will be included in the financial statements for the previous year.

Requirements relating to the actuarial function under Solvency II are particularly interesting for actuaries. Formally, establishment of actuary function is required within the insurance company with responsibility for technical reserves assessment. However, it is not requested for the function to be performed by qualified actuaries but it is acceptable to be performed by persons understanding stochastic nature of the insurance, risks in the assessment of assets and liabilities, including also the risk from assets and liabilities mismatch, who know to use statistic models and are familiar with and experienced in the calculation of technical reserves.

More precisely, quality of data based on which calculations are performed is defined. Data should be accurate, complete and appropriate. Actuary function is responsible for the accuracy and appropriateness of the data, whilst internal audit is responsible for the data accuracy.

Technical reserves are assessed based on gross from reinsurance principle and then reinsurance is calculated separately, under similar methodology. Solvency II concept brings a lot of challenges when calculating reinsurance:

- Cash flows are different for gross claims and for reinsurance recoveries,
- Assessment of non-proportional covers is reduced by all possible future outcomes, in practice requiring significant changes in current calculation methodology,
- Recognition of existing contracts changes.

In order to maintain consistency, principle of correspondence between gross and net is recommended in all mentioned calculation of reinsurance.

Technical reserves evaluation requires the collection of quality and quantity of data and expert judgment of such information, due to which the assessment can not be completely based on the model.

1.1. SEGMENTATION

Minimum segmentation of all insurance agreements into homogenous risk group in non-life insurance required under Solvency II is conducted per following lines of business:

1. Accident
2. Health
3. Workers' compensation (accident at work, injury at work and occupational diseases)
4. Motor vehicles liability
5. Motor (including railway vehicles)
6. Marine, aviation (including liability) and transport
7. Fire and other damage (including other property insurance)
8. General liability
9. Credit and suretyship
10. Legal expenses
11. Assistance
12. Miscellaneous non-life insurance (including insurance against financial loss)

The above segmentation is used also for proportional reinsurance, whilst it is necessary to group risks, for non-proportional reinsurance, into significantly smaller number of categories:

1. Property
2. Casualty
3. Marine, aviation and transport

Minimum number of categories in life insurance required by Solvency II:

1. Contracts with profit participation clauses
2. Contracts where policyholder bears investment risk
3. Contracts without profit participation clauses
4. Accepted reinsurance

Each of mentioned categories is divided into 4 sub-categories:

1. Contracts where the main risk driver is death
2. Contracts where the main risk driver is survival
3. Contracts where the main risk driver is disability/morbidity risk
4. Savings contracts

For the calculation of the best estimate, it is necessary to perform segmentation also per currencies in which obligations towards insured will be paid. It is necessary to define significant currencies under which

grouping will be conducted. In Serbia it should be: EUR, USD, CHF and RSD. For example, in Great Britain besides mentioned currencies, except RSD, significant are⁴ also GBP, CAD, JPY, AUD, ZAR and HKD.

1.2. TECHNICAL RESERVES

The value of future liabilities in non-life insurance should be calculated and disclosed separately as reserves for claims and premium reserves. Cash flows should also be separated into these two categories:

Main differences brought by Solvency II compared to present calculation:

- All implicit and explicit margins providing prudence in calculation are removed,
- Cash flows is requested for all lines of business and segments, even for those classes with insufficient data, it is necessary to introduce cash flow patterns assumptions,
- All cash flows are adjusted for the time value of money,
- Indirect expenses are projected together with claims,
- It is assumed that future inflation will be equal as in the past, and in case of any deviations careful documentation is necessary,
- Binary events are also included in the projected cash flow.

Long-term actuary practice of the assessment of non-life technical reserves on non-discounted basis has been changed because it is not consistent with the market and very often gave too prudent reserves.

Claims reserves

Reserves for claims can be divided into three components:

- Reserves for reported but not settled claims represent evaluation of claims known to insured at the end of accounting period (RBNS),
- Reserves for the incurred but not reported claims are formed in order to cover payments for adverse event, which occurred but still are not been reported to the insurance company (IBNR) and
- Reserves for insufficiently reserved claims relating to claims being reassessed and for which it has to be explicitly emphasized that there is a possibility of additional paying in the future (IBNER).

Reserves for claims should also include all expenses for claims settlement.

At the beginning of implementation of Solvency II, present method of calculating claims provisioning will continue, but stochastic methods will be develop in the future. The most famous method of projecting claims, such as Chain Ladder and Bornhuetter-Ferguson will still be in use. The new thing is that it will be necessary to show cash flows based on claims reserved, which is not necessary at the moment.

Premium reserves

The introduction of calculation of premium reserves is the main difference brought by Solvency II since present calculation of unearned premium terminates.

The best estimate of premium reserves is calculated as expected present value of future ingoing and outgoings cash flows and consists of:

- Future premium receivable;
- Cash flows resulting from future claims events;
- Cash flows arising from allocated and unallocated management expenses; and
- Cash flows arising from ongoing administration of the in force policies.

Characteristics of premium reserves:

- In certain cases, premium reserves will be negative and is not required its setting to zero, as it is now,

⁴ Lloyd's: *Technical Provisions Under Solvency II – Detailed Guidance*

- Besides standard policies belonging to current year, calculation also includes all policies, based on the rule on legal obligation basis, which will be renewed on January 1st one day after the date of calculation,
- Projected cash flows include behavior of policyholder and their lapse trend as well probability that policyholder will go bankrupt before the payment of all premium,
- By termination of unearned premium, unearned portion of business occurring after the date of calculation is included in result of the current year under the principle of the best estimated and if generating profit, such profit is recognized under the financial reports of the current year,
- premium reserves decrease based on expected cash flows – future incomes from premium are offset by expected future outgoings for claims and that way reducing total reserves,
- requests for including future incomes from premium in technical reserves are not in accordance with the International Financial Reporting Standard 4: Insurance Contracts, so in the initial phase of Solvency II implementation, technical reserves will be calculated differently for the accounting and for solvency purposes. Harmonization under this issue is expected in the phase two of IFRS 4.

Example⁵ how technical provisions calculation under Solvency II affects on financial report

- Policy is issued for period from July 1st to June 30th with the uniform risk distribution during entire period,
- claims are paid on quarterly basis in the month following the end of quarter,
- total premium is 100 money units and is paid 40 units at the beginning of insurance and 20 units in each month coming after the end of quarter,
- claims ratio is 72%,
- calculation is made on December 31.

For the purpose of simplicity, discounting and calculation of risk margin are ignored.

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total
Premium	-40			-20			-20			-20				-100
Claims paid				18			18			18			18	72
Cash-flow	-40			-2			-2			-2			18	-28
Earned premium	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8		-100

Balance sheets on December 31 would look as follows:

<u>Present financial report</u>		<u>Financial report in the Solvency II</u>	
Assets	82	Assets	42
Cash	42	Cash	42
(= -40 -20 +18)		(= -40 -20 +18)	
Receivables	40		
(= -20[Jan] -20[Apr])			
Liabilities	68	Liabilities	14
Reserved claims (on earned premium)	18	Claims reserve (= 18 to be paid in January)	18
Unearned premium (pro rata temporis, 6/12 x 100)	50	Premium reserves (= -20[Jan] -20[Apr] + 18[Apr] + 18[Jul])	-4
Profit	14	Profit	28

The most important conclusions relating to balance sheets according to Solvency II concept, based on examples are follows:

⁵ Lloyd's: *Technical Provisions Under Solvency II – Detailed Guidance*

- the amount of provisions is decreased,
- entire profit is recognized in the year in which the policy is written,
- premium reserve is negative,
- there are no items connected with cash flows such as reserves for unearned premium.

By applying discounting in this example, premium reserves would reduce additionally and become more negative, because the time period within premium are collected is usually shorter than the period within claims are paid. This is particularly significant for the lines of business often called “long tailed classes” such as liability insurance.

1.3. DISCOUNTING

The best estimation refers to probability weighted average of future cash-flows considering the time value of money (expected present value of future cash flows); by using appropriate risk-free interest rates term structure.

Risk-free term structures used in discounting for significant currencies are prescribed by Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) for all EU countries. CEIOPS is also responsible for yield curve derivation methodology, therefore local supervising authority for insurance activity for other countries will be able to define them independently and consistently. Yield curve will be published on end date for each financial reports accounting period, most probably on quarterly basis. The benchmark for risk-free term structures will be government bonds with AAA rating. For certain countries and currencies they will be used for the determining the structure if meeting the following criteria: no credit risk, they are realistic, prices have been reliably set, with high liquidity and with no technical bias. If any, but not meeting mentioned criteria, their rates will be corrected by the rates from bonds meeting mentioned criteria. If there are no such public bonds or they cannot be corrected, the use of other, similar financial instruments will be considered. Their rates will be corrected for the credit risk and other deviations from specified criteria. Swap financial instruments should not be used for technical provisions discounting without correction for the credit risk. If there is not appropriate maturity of financial instruments for the creation of risk-free yield curve, it is necessary to perform extrapolation.

Technical provisions based on the best estimation will be very volatile and sensitive on risk-free interest rate changing used for discounting. Testing sensitivity to different discounting rates will be very important for the management of the company, to understand better possible movement of liabilities in future, considering the potential volatility of the technical provisions in the Solvency II regime. Actuary function will have significant role in the creation and regular application of risk-free yield curve and deciding when it is necessary to include stochastic methods in establishment of cash-flows.

1.4. RISK MARGIN

Risk margin should ensure that technical provisions are equal to amount the insurance and reinsurance company would have to pay in case of transferring their liabilities to the other insurance and reinsurance company.

Technical provisions for non-life insurance are calculated as the sum of best estimation and risk margin. Risk margin is calculated using cost of capital and approach as the present value of the expenses of providing an amount of eligible own funds equal to the Solvency Capital Requirement (SCR) for risks that cannot be protected from by using hedge techniques, during the entire validity period of active portfolio, by using appropriate termed structures of risk-free interest rate.

General formula for calculating risk margin under Cost of Capital Methodology (CoCM) is:

$$CoCM = \sum_{LOB} CoCM_{LOB} = \sum_{LOB} \left\{ CoC * \sum_{t \geq 0} \frac{SCR_{RU,LOB}(t)}{(1+r_{t+1})^{t+1}} \right\}$$

where:

$SCR_{RU,LOB}(t)$ is SCR for given line of business for the year t , as calculated for the receiving of transferred liabilities of the other company portfolio,

r_t is risk-free rate in the year t ,

CoC is the cost of capital rate.

SCR used for calculating risk margin consists of:

- underwriting risk (reserves and premium risks),
- risk of bankruptcy of reinsurance partner,
- operational risk, and
- unavoidable market risk.

2. QUANTITATIVE IMPACT STUDY

Quantitative impact study (QIS) determines quantitative requirements for the new solvency rules and it is the study used by EU to test the influence of certain provisions, entire Directive or proposed measures for the operations of insurance and reinsurance companies in EU. These studies are conducted by EIOPA who successfully organized and published results of five studies from 2005 to 2011. The Fifth Quantitative Impact Study (QIS 5) was conducted in order to show how the financial position of the insurance companies will look like in terms of new regulations, emphasizing capital adequacy. A year ago, result of this study were published in Croatia.

2.1. QIS 5

QIS 5 was conducted by EIOPA in 2010 at the request of European committee in cooperation with supervising authorities from the member-states for the purpose of analysis of quantitative impact of new provisions before the implementation. QIS 5 requirements are defined under Technical specifications prescribing in more details valuation of assets and liabilities, as well as the valuation of technical provisions, calculation of SCR and MCR, own assets and calculation for the groups. EIOPA published report on QIS 5 in March 2011 with balance on December 31, 2009. All 30 countries of common European economic zone took a part and about 2.520 companies and 167 groups participated. According to EIOPA report, 15% of companies participating in the study did not completely cover SCR, which would be indicator for the initial reaction of supervising authority. About 9% of the companies covered 75% or less of SCR. About 5% of the companies did not cover MCR which would be indicator for the serious reaction of the supervising authority meaning initiating the process of revocation of the license from the insurance or reinsurance company when Solvency II is officially applied.

It is interesting that the forth study (QIS 4) showed that technical provisions in the Solvency II regime decrease by about 17% on the main European markets compared to present condition.

2.2. ANALYSIS OF TECHNICAL PROVISIONS IN QIS 5 IN CROATIA⁶

Before starting implementation of the new Solvency II concept in Croatia, Hanfa conducted QIS 5 in 2011 and 2012 based on information on December 31, 2010. The purpose of the conducted study was establishing specificities of the insurance market in Croatia, quantification of the influence of application, establishment of resources necessary to conduct Solvency II as well as improving the awareness in quality of available information. The main purpose of conducting QIS 5 is to provide all interested parties with detailed

⁶ Hanfa Report on conducted Quantitative impact study (QIS) of Solvency II regulations of the insurance company and reinsurance company in the Republic of Croatia,

information on quantitative impact of Solvency II implementation on the financial status of the insurance or reinsurance companies compared to valid regulatory framework Solvency I. Total of 25 insurance and reinsurance companies participated in QIS 5 in Croatia, covering 99.7% of total premium on December 31, 2010. Participants calculated capital requirements under the standard formula. For the purpose of study, Hanfa prescribed the structure of risk-free interest rates, as well as non-liquidity premium for EUR, USD and HRK for the year 2010 since they were not provided for by EIOPA.

Technical provisions were calculated as the sum of best estimation and risk margin. Total technical provisions of all insurance companies that participated in QIS 5 in Croatia decreased 18.6%.

The study pointed to problems within following areas:

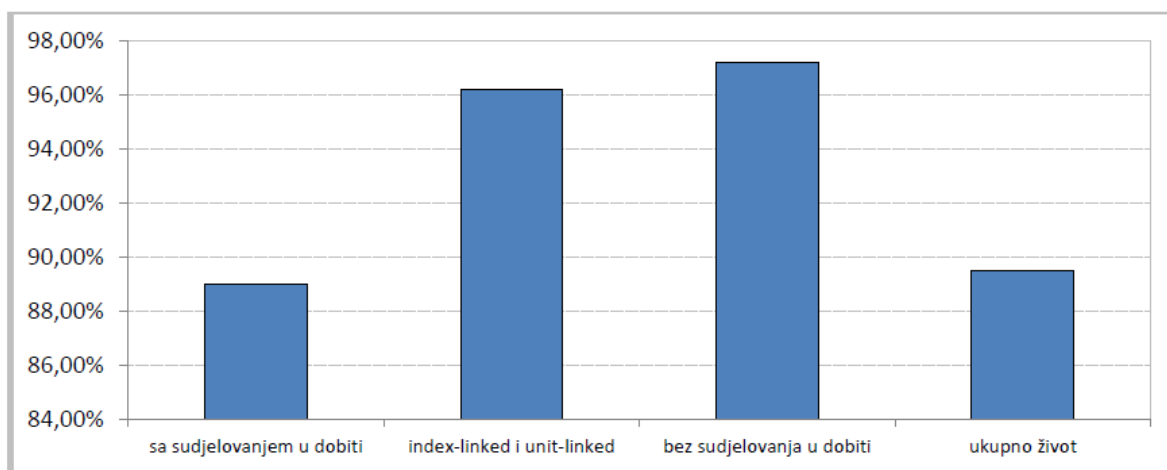
- calculation of risk margin by using principle of full calculation is too complicated and companies used simplification for QIS 5. However, different simplifications can give different results, and in order to secure the consistency of all participant, it is necessary for the Agency to prepare additional instructions;
- complexity of calculation due to valuation per large number of risks per different currencies on gross and net level;
- valuation of guarantees and options requires stochastic models not implemented yet in majority of companies.

Comparison with the present situation

Main differences when valuating technical provisions in QIS comparing to current valuation system are follows:

- using new discounting mode including the implementation of non-liquidity premium for liabilities in EUR,
- cancelation of all implicit and explicit margin when calculating technical provisions,
- recognizing future premium and costs,
- implementation the principle of priority of content over form, when segmenting liabilities.

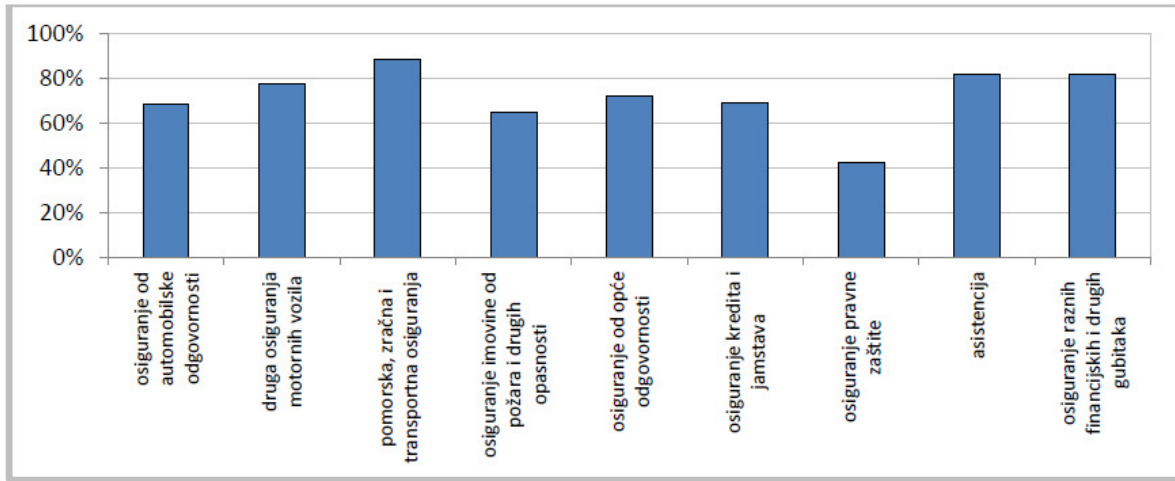
Graph 1 - Relation between QIS 5 net technical provisions and Solvency I in life insurance



Source: Hanfa „Report on conducted Quantitative impact study (QIS) of Solvency II regulations of the insurance company and reinsurance company in the Republic of Croatia“

Results of comparing reserves requirements under QIS 5 and current Solvency I concept are presented in details in graphs 1 and 2. When implementing QIS 5, it would take about 10% net and 8% gross technical provisions less in life insurance and about 30% net and 25% gross technical provisions less in non-life. Rather large decrease of technical provisions in non-life insurance occurs because of cancelation of equalization risk reserves, future cash flow discounting (particularly for the insurance lines “long tailed classes”), by terminating implicit safety margins as well as different segmentation. Implementation of explicit risk margins, as the part of technical provisions slightly mitigated the decrease of reserves.

Graph 2 - Relation between QIS 5 net technical provisions and Solvency I in non-life insurance



Source: Hanfa „Report on conducted Quantitative impact study (QIS) of Solvency II regulations of the insurance company and reinsurance company in the Republic of Croatia“

Risk margin

In QIS 5, companies used certain simplification when calculating risk margin and the most often it was method of solvent capital requirement approximation. Risk margin share in total net technical life insurance reserves was about 7% whilst it was between 5% (MTPL) and 35% (financial loss) for non-life insurance.

3. TECHNICAL PROVISIONS ASSESSMENT

IFRS 4 requires Liability Adequacy Test (LAT). LAT means that insurer assesses, on each reporting date, if their liabilities based on insurance are adequate, by using actual assessment of future cash flows based on insurance contracts. If such assessment shows that accounting value of their liabilities based on insurance is not adequate in terms of assessed future cash flows, the entire deficiency is recognized in profit and loss account. The most important components from LAT for non-life insurance are checking adequacy of provisioned liabilities for claim under the Run off Analysis and Unexpired Risk Reserves calculation.

QIS 3⁷ in paragraph I.1.122 provided for that the sum of unearned premium and URR calculated according to IFRS 4 rules in Solvency II regime is an acceptable approximation of the sum the best estimation of premium reserves and risk margin, whilst paragraph I.1.123 required from the insurer to run LAT and confirm this approximation is good.

During further QIS, mentioned approximation and request to executing LAT were abandoned, since premium reserve adequacy is obtained automatically from the principle of calculating premium reserve by best estimation. LAT basically extrapolates recent previous experience aiming at obtaining alternative substitute for the value of best estimation and in case that such experience is not representative, LAT requires higher reserves than calculation consistent with market.

Substitute for Unexpired Risk Reserves

Unexpired risk reserves are formed in the case when there is no insurer's ability to completely cover expected claims and costs arisen from active portfolio after the date of value assessment. It is defined as the assessment of future amounts that have to be reserved in order to be used for claims and costs which will

⁷ CEIOPS (2007), *QIS3 Technical Specification*

arise from unexpired risk and which exceed unearned premium reserves relating to such risks on the same assessment date. In other words, if any, it is the margin in relation to the amount of expected claims and costs from the active portfolio on the date of assessment covering unearned premium reserves for such class on the same date. URR are calculated based on projection for future claims and costs which are expected to arise after the assessment date and which relate to the contracts valid on the date of assessment. Obtained amount is compared with the established reserves for unearned premium, after all deferred acquisition costs. Each amount of surplus is recognized as URR.

Solvency II concept means premium reserve established by the method of best estimation as substitute for actual unearned premium reserves and unexpired risk reserves. Calculation of the premium reserve include payment of future claims arisen due to future adverse event pursuant to currently active policies, appropriate future administrative costs and all future expected premium. This is the most important change⁸ in the present accounting practice of calculating unearned premium according to pro rata temporis method. It means that within Solvency II method final combine ratio (for covering payment of claims, claims settlement costs and other administrative costs) should be observed in connection with unearned premium. Therefore, when discounted combined ratio which is implemented on unearned premium is below 100%, expected profit is immediately recognized in the financial report, on a contrary with the current unearned premium calculation methodology. When discounted combine ratio exceeds 100%, it will lead to the creation of the additional premium reserve, similar to the current approach to the creation of URR, except that new premium reserves would be less than URR due to discounting implemented.

Analysis of the reality of the reserved claims amounts

Realistic assessment of the final claims amounts and adequate provisioning of claim amounts towards the insured is very complicated. Sufficiency of assessed amounts of such obligations is checked by actuary under run off analysis. Run off analysis for the provisioned claims of the certain line of business are obtained by adding following elements:

- + reserved claims at the beginning of accounting period
- settled claims during the period
- reserved claims at the end of accounting period

If the result is:

- >0 => reserved claims at the beginning of the period were overrated,
- <0 => reserved claims at the beginning of the period were underestimated,
- =0 => reserved claims are assessed realistically, which is almost impossible to achieve in practice

Within the Solvency II regime, systematic back-testing is required where the best estimation of claims from the past is compared to live experience. This way, parameters of the method used for reserved claims calculation is checked as well as used presumptions and expert opinions. If any significant difference between actual and expected condition of claims is identified during the testing, such difference has to be analyzed in order to find out reasons of the occurrence. The most often reasons result from accidental variations, systematic effect, mistake in presumptions, and mistake in the parameters or it is combination of several factors. Depending on the reason for the occurrence of the difference, testing results should be also recommendation for the possible improvements of calculation, in order to make claims reservation even better. It is expected to conduct this testing most often on gross of reinsurance and non-discounted basis, on group of risks as provided for by segmentation within Solvency II regime or even lower.

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