Solvency II Implementation Challenges In Small Transitional Countries

— ABSTRACT —

Željko Šain, PhD
Bosnia and Herzegovina
School of economics and business in Sarajevo
Trg oslobođenja – Alija Izetbegović 1.
Phone: ++ 387 33 275 900; Fax: ++ 387 33 275 966
E-mail: zeljko.sain@efsa.unsa.ba

Jasmina Selimović, PhD
Bosnia and Herzegovina
School of economics and business in Sarajevo
Trg oslobođenja – Alija Izetbegović 1.
Phone: ++ 387 33 275 900; Fax: ++ 387 33 275 966
E-mail: jasmina.selimovic@efsa.unsa.ba

Key words: *SOLVENCY II, solvency, actuarial science, transitional countries*

Paper with presentation

Solvency measurement is definitely one of the most sensitive actuarial tasks in insurance company. Its specific importance does not change if we discuss life, health, non-life or pension insurance. Also, in each of the previously mentioned insurance types, solvency is one of the most relevant indicators.

The current regime, Solvency I, took some time to be appropriately adopted in all counties obliged to implement the system. At the beginning, the implementation of Solvency I was a challenging issue, but these days that is the history for most developed countries. Unfortunately, we cannot conclude the same for transitional countries.

As logical consequence of the financial sector transition in last decades, European Union financial authorities was trying to define the new, better solvency assessment system that could be adopted in most countries in the Union. That procedure was officially started in 2006 and it is still not done.

All EU members will be obliged to implement the system, at least its standard part. All more sophisticated measures are left for the countries' insurance companies and/or supervisors to decide either to implement or not.

When discussing the developing countries, that are knocking at the EU door, the insurance directives implementation possibilities is one of very important questions. Given the importance of small countries' stabilization and association procedures, the financial sector if one of its key elements.

When it comes to insurance, solvency measurement is, at the time being, the most challenging part of it.

Challenges are numerous, and as the most demanding ones are related to lack of data, inappropriate knowledge and continuous education. Also, the supervisors are not aware of their importance in the whole process. The survey concluded between actuaries in insurance companies, has also identified some other important issues that will be elaborated in paper further.

The intention of the paper is to make clearer the key challenges of Solvency II regime implementation in small transitional countries, considering the small countries characteristics and the Solvency II complexity.

1. SOLVENCY

The general definition of this term asserts that any subject that can pay, or who is liquid, may be deemed as being solvent. A somewhat more precise definition sees solvency as the ability of paying all the receivable claims or debts.[1] The insurance dictionary defines solvency as the financial ability of a company, or the firm that has ability to use monetary means at its disposal, to settle the payment of its obligations within the terms of their fall due. It is the situation when the company assets exceed the amount of its debts. It can be concluded, in view of the aforementioned definitions, and in the context of insurance societies, that an insurance society which can meet all its dues (dues related to insured cases) within the terms of their fall due with the collected premiums (as the income that has the largest share in the structure of the total proceeds, but which need not be the only income of the insurance company) happens to be solvent. Such a definition can be further subdivided in an analytical sense into several analytical wholes, depending on to what type of insurance (life or non-life insurance) it is intended to.

Generally, solvency may be viewed from the standpoint of insurance company, but also from the viewpoint of a supervisor.[2] Within the context of this paper's topic, the insurance company is the firm that undertakes solely the business transactions in premium insurance, and whose main goal in business operations is to gain profit. Insurers pay in their premiums (and their amount reflects the level of the risk insured), and, in case when the insured case happens to be realized, the insurance company (insurer) is obligated to pay the insured sum (indemnity). The opposite of this model is a mutual insurance, but the topic of this paper does not cover the features of this model and its solvency.

If solvency is considered from the insurer's standpoint, then the basic business aim is to secure a profitable company business dealings in the future. If solvency is to be defined from the supervisor's viewpoint, then the basic business goal is to provide a security of policyholder and/or insured person, in the context of payment of insured sums in the moment when the insured case occurs. Depending on need, these two definitions can be used interchangeably in specific different cases. Nevertheless, a comparative analysis may lead to a conclusion that the definition related to the features as observed from the supervisor's point of view is somewhat narrower and more concrete. The focus of

[1] *Webster's Encyclopedic Unabridged Dictionary of the English Language* (New York: Gramercy Books, 196), p. 1818.
[2] Teivo Pentikäinen, „On the solvency of insurance companies", *ASTIN Bulletin*, Vol. 4, Part 3 (1967.), pp. 236-247.

attention has been shifted to the insured person (or policyholder) and its well-being. The insurer's business dealings' goal should b focused on the insured person. Only in situations when the insurer is capable of fulfilling its obligations towards policyholders, and within the set terms of fall due and under all reasonably foreseeable circumstances, it may be deemed as solvent[3] (International Association of Insurance Supervisors – IAIS 2002).

Three concepts can be discerned in theory. [4] Under the first concept (going concern situation), the insurer is solvent when it pays its obligations in fall dues. Under the second concept (breakup situation), the insuring company pays its obligations not when they are due but in the moment of the business dealings liquidation. The third concept (run-off situation) implies the impossibility of the initial insuring company to fulfill its obligations according to the concluded policies, but it transfers its obligations (and the overall insurance portfolio) to another insuring company that is willing to accept it.

The theory and business practice up to now have subdivided solvency models assessment into a classic model, economic model, and European assessment model.

a. Classic assessment model

In 1966, the first official characteristics of the insuring company solvency (within the context of classic assessment model) had been set up. The first six basic conditions that insurance companies had to meet were:[5]

- The insurer's liabilities should be valued by a net-premium method or on some other basis producing stronger reserves.
- An appropriate Zillmerized reserve should be acceptable tool in order to allow for initial expenses.
- Adequate margins over the current rate of expenses should be kept in the valuation of the liabilities, in order to provide for future renewal expenses.
- Appropriate recognized tables of mortality should be employed.
- The valuation of the liabilities should be at rates of interest lower than those implicit in the valuation of the assets, with due regard to the incidence of taxation.
- The total mathematical reserves must, at all times, be at least equal to the surrender values guaranteed in the contracts.

The classic model, which had been elaborated upon, presupposed a determination of margin solvency assessment based only on a single variable – technical reserve (or mathematical reserve, to be more precise).

b. Economic assessment model

Economic assessment models have developed in the last thirty years. As different from the previously used classic assessment solvency models, the economic models took into account all the risks that the insurance companies may have been exposed to in the process of solvency assessment.

[3] IAIS, *Principles on capital adequacy and solvency*, (Tokyo, IAIS, 2002), p. 4.
[4] Bernard Benjamin, *General Insurance*, (London: Heinemann, 1977), p. 110.
[5] T.H.M. Oppé, „The implications for British insurance, particularly long-term business, of joining the European common market", *Journal of Institute of actuaries*, No. 97 (1971), p. 161.

From the very beginning of this concept, there have been two streams that influenced on the model development. One of them, consisting of academics and experts originally from Europe, based their research on the classic risk theories and techniques of risk management, whereas the other one, from USA, based its research on new ideas from financial mathematics. In the context of current terminology, the risks have been aligned into three categories: a bad assets assessment risk, inadequate net premium risk, and the risk where assets and liabilities have not been harmonized.

c. European assessment model

Works by actuary Cornelis Campagne have been the foundation for European Union directives on solvency. In the works of Prof. Cornelis Campagne the most dominant risk had been the risk of investing the technical reserves funds. The minimum solvency margin was given as the percentage of technical reserves. The first generation of Directives that defined solvency came into being in 1970s. The aforementioned Directives have been supplemented with the Second and Third generations in 1980s and 1990s. The Müller Report from 1997 had initiated the whole series of discussions, so the European Parliament adopted the revised Directives under the heading Solvency I in 2002. At the same time, the work intensified on risk-based evaluation systems. The new system was named Solvency II. It had been initially planned to have Solvency II come into force on October 31, 2012, however, its application was postponed by the Parliament's decision to December 31, 2012. The new application date for Solvency II now stands for January 1, 2014 (the date was made known in July 2012). After the Solvency I Directive had come into force, the first official ideas for developing the new system Solvency II, were given to EU Commission in 2006, whereas the proposed text of the Directive was agreed upon and published on July 10, 2007. The text was appended on February 26, 2008.[6]

Taking into account all the complexity of Solvency II system, volatility of financial markets, but also of all other relevant occurrences in the financial sector, it is highly likely and expectations are quite justified to see that Solvency II assessment system will come to life in business practice not before 2015, or even by 2016.

2. SOLVENCY ASSESSMENT DETERMINANTS

There have been many definitions of solvency offered in previous sections of the paper. Most of definitions related to the general definition of solvency in any given company. In addition, some basic explanations of solvency have been also offered that happen to be of importance when one thinks about insurance companies' solvency. Based on such, rather general, features of solvency, solvency assessment models have been described in terms of life insurance companies in several countries across the world. One can observe in the models presented a whole series of parameters that need be equipped with quantifications when one wants to assess the insurer's solvency. Depending on the valuating system, regulators in some countries defined parameters that were quite similar, but

[6] Taking-up and pursuit of the business of insurance and reinsurance (Solvency II), Proposal, http://europa.eu/legislation_summaries/internal_market/single_market_services/financial_services_insurance/l22030_en.htm

adapted to terminology in the countries where the assessment was to be carried out. Throughout this paper, all the elaboration will be based on the European Union terminology, or the Directives that offer precise descriptions of insurance company solvency.

By and large, solvency margin in an insurance society has been defined as the surplus of assets over the insurer's liabilities. The insurer's assets has been subdivided in terms of analysis into categories, as it had been prescribed by international accounting standards, as well as of financial standards reporting. The same conclusion applies to insurer's liabilities (insurer's liabilities also cover capital in addition to contract-based obligations). Therefore, any surplus of assets over liabilities is determined as a solvency margin (SM). That amount of assets, which is the surplus in relation to the part needed to cover the liabilities, usually consists of two parts. One part relates to high quality assets and the insurer must have available solvency margin (ASM) at its disposal. The assets of the same characteristics should be the one that is equal to liabilities. The other, smaller solvency margin part consists of the assets that the insurer does not have at its disposal. There are no general conclusions offered as to the time period for which the margin can be calculated, as well as on its relative (or absolute) amount, for that matter (these determinants have been specified by the current laws of the country, or by general directives). If the solvency margin value is more than 0, the insurer is deemed to be solvent.

Solvency treatments within any given company are different. As it has been aforementioned, it is possible to treat solvency as an indispensable feature:

- of the insurer's business transactions (which is the primary goal by the company's management), or
- providing funds that are sufficient enough to fulfill obligations towards policyholders (which happens to be the primary goal of insurance supervisor).

These two mentioned conditions can be treated either in a complementary or in an exclusive way.

An insurance company can do business (it is possible to maintain the company with certain funds at its disposal), even if it does not have sufficient technical reserves that provide payment to policyholders based on insured cases. If solvency is to be defined as the ability of fulfilling obligations, according to the going concern concept, which means according to fall due, then one cannot pronounce that such a company is solvent. If solvency is to be understood according to either break-up or run-off approach (which refers to fulfilling obligations only in the moment when the company is to be liquidated), in such a case the insured can be valued as solvent.

In such a case, the insurer usually calculates the value of its economic capital, which needs to be secured in order meet the obligations. The goal is to calculate the highest value, but, in real terms, which can help fulfill the insurer's obligations. The economic capital calculation has initiated, in turn, some discussions on one's own risk and solvency assessment (ORSA).

There is yet the second possibility where the insurer has enough reserves to pay off the insured sums (or even bonuses) to policyholders. In such a situation, the insurer's business dealings and its destiny, within the context of the insurer's existence, in the future is entrusted to the company management. It is customary for the management to rely on adequacy of reserves, costs or re-insurance coverage.

The optimum solution may be seen in an approach where both aforementioned conditions can be viewed as the constituent parts of the same whole. Deliberations that have led to forming of

Solvency I and Solvency II directives had been based on considerations within such a context. In both directives, the first pillar had been envisaged to define quantitative preconditions for a calculation of the insurer's technical quantities, whereas the second pillar has been brought into relationship with the process of supervision. In this way, both directives make a link between the two conditions that provide insurer's security, solvency and optimal business dealings. In addition, the insurers can realize all the specific requirements within the internal models, which had been foreseen in the EU legislature.

Stipulations on solvency of life insurance had been first mentioned in the First Directive that regulated life insurance. It had been prescribed in them to have the amount of money, which represented additional funds in comparison to the amount that covered the amount of technical reserves, and which served to fulfill all the reasonably envisaged obligations. The Second and the Third Directives did not cause many changes. Details will be dealt with later on in the paper. In Solvency I, the solvency margin has been reiterated again in an explicit way. Its meaning and calculation was emphasized, but, it should be noted that the stipulations refer to long-term business dealings, since it was written in it that the insurer must have additional funds at its disposal in any given moment of time. Therefore, according to the going concern concept, the insurer fulfills its obligations in compliance with their fall due, and, in such a case, it can be treated as solvent. The role of regulatory body was also prescribed in Solvency I Directive.

Having searched for the optimal solution in the context of two opposed treatments of the insurer's obligations and conditions for their fulfillment, the Dutch supervisors specified the third solution as well. Such a status for the company implies the valuation of the insurer's financial position in the next 12 months. The preconditions for the company solvency have been met if the insurer is capable of meeting all its obligations in the next 12 months (after which the company may even terminate its business dealings).

The Swiss approach implies the existence of two levels of reserves above the technical reserves at the insurer's disposal. One level refers to the risk margin having been foreseen in case of the company's liquidation, whereas the other level refers to margin that can be understood as identical to the solvency margin.[7]

The second analytical approach to solvency margin treatment does not differentiate between a part of assets that is at disposal (available solvency margin) and the part that the insurer does not have at its disposal. The difference between assets and liabilities is referred to as the Available Solvency Margin (ASM). If this value is bigger or equal to 0, the insured is thought to be solvent. If the value is less than 0, the insurer is treated as insolvent.

As it has been seen above in the text, the different solvency assessment systems had determined the different capital requirements in the context of defining different needed levels of capital that an insurer must have had at its disposal. In some systems, two levels have been defined, whereas only one exists in some other ones. The minimum amount of capital in some systems is thought to be a serious sign that a company can no longer proceed with its business transactions (if it has capital the

[7] Sandström A. Handbook of Solvency for Actuaries and Risk Managers: Theory and Practice. USA: Chapman&Hall/CRC; 2011. p. 3.

amount of which cannot meet the prescribed criteria), whereas the other systems see it as the target capital amount, which implies consultations with supervision, but, in any, case, it does not foresee the end of business operations.

In the context of the topic of this paper, in the text that follows, the stipulations of legal systems that have defined two levels (two amounts of capital) will be used. The first, lower amount of capital is the minimum capital requirement (MCR). If the insurer's new capital is on the MCR level, it is understood that the supervisor's intervention is indispensable and that the insurer has come to the insolvency zone (outside the solvency frameworks which had been stipulated in the applicable legislature). The second, higher level of capital is a solvency capital requirement (SCR). This amount, as well as the previous one, has been defined in the legal stipulations. This amount is the insurer's target amount of capital. The relationship between the aforementioned capital categories is as follows: MCR<SCR≤ASM.

The amount described as ASM is the amount of capital generally described as the condition when the insurer is solvent. If this amount is to be decreased by the amount of MCR, then the insurer can be deemed solvent even under the supervisor's stipulations. It is possible to establish certain interdependencies between the defined levels of capital, which have been referred to before, but in the different context.

If the value is ASM≤MCR, then the insurer's value of capital has come below any acceptable minimum. In such a case, the supervisor must react, and, based on other financial and technical indicators of the insurer's, it must decide whether or not the insurer should continue with its business operations. In the case when the insurance company is allowed to continue with its business dealings, it means that it can only fulfill the obligations it had already undertaken, and in no case it can undertake new contracts. Such a solvency (and it can be rather characterized as the condition of insolvency) is referred to as a static insolvency.

There is yet another situation if the amount is ASM≤SCR. In such a situation, the insurance company pays out its obligations regularly, and this kind of solvency is referred to as dynamic.

In the long historic treatment of insurance company solvency (which dates from 1948), the first discussions on the fundamental categories that needed to be assessed towards the solvency valuation came into being in 1967.[8] The most important determinants of the insurer's solvency assessment are the evaluation of insurer's liabilities (or, the mathematical reserve in life insurances), the evaluation of insurer's assets, the level of premiums and reinsurance policy. Reinsurance policies may in different ways exert influence on the solvency assessment, either directly or indirectly. The role of reinsurance will not be analyzed in detail in the remainder of this paper.

8 Discusions in the work by Teivo Pentikäinen, „On the solvency of insurance companies", *ASTIN Bulletin*, Vol. 4, Part 3 (1967.), pp. 236-247.

3. SOLVENCY ASSESSMENT MODELS

Generally, it can be observed that all the developed countries have thought in great details about the issues of solvency. The world superpowers have been definitely aware of the current turbulent surroundings and a great number of risks. In addition, the approaches happen to differ, but all models exhibit the basic trend – the focus is on the risks that a company and its reserves can be exposed to. The differences refer to the quantification techniques and the ability to perceive risk.
In order to offer present a better overview, the basic characteristics in the current solvency assessment models across the world is given in the table below.

				1. *Assessment*				
Liabilities	BE	actuarial	BE	BE	BE	BE	BE	actuarial
Technical res.	FV	actuarial	MV	FV	FV	FV	FV	actuarial
Assets	MV	MV	MV	MV	MV	MV	MV	cost of MV
				2. *Solvency*				
Fixed ratios	1973.		EU	EU		EU	EU	
Risk factors	yes	yes		yes	yes		yes	yes
Scenario		yes	yes	yes	yes	yes	yes MCR	yes
Principles	yes			yes		yes	yes ECR	
				3. *Capital*				
Fixed	2 mil $		EU	EU	5 mil $	EU	EU	
MCR	yes	100% MCT 120% TAAM	yes EU	yes EU		yes EU	yes EU	% RBC
SCR		150% from MCT/TAAM		TC	TRR	TC	ECR	RBC
				4. *Internal models*				
Usage	yes	yes		yes	yes	yes	yes	ALM
				5. *Time sequence*				
Period (year)	permanent	5	1	≥1	permanent	1	1	1
				6. *Intervention*				
Intervention	yes	yes	scoreboard	yes	yes	yes	yes	5 levels
				7. *Level of reliability*				
Reliability %			VaR 99.0 and 99.5	VaR 99.5		ES 99.0	99.5	
				8. *Available solvent capital*				
Existence	capital	TAAM	ASC	ASC	FR	ASC	ASC	TAC

Table 1 Comparative review[9]

ALM – assets liability management
ASC – available solvency capital
BE – best estimate
ECR - Enhanced capital requirement
ES or TVaR – expected shortfall, tail value at risk,
EU – European Union
FR – financial resources,
FV – future value,

[9] The author has taken and adapted the table from A. Sandström, (2006) p. 178.

MCR – minimum capital requirement,
MCT – minimum capital test
MV – market value
RBC – risk-based capital
TAAM – test of adequacy of assets
TAC – total adjusted capital
TC – target capital
TRR – total risk requirement
VaR – value at risk

4. FUTURE OF SOLVENCY

Solvency II has been described as an event that takes place once in 200 years. After the whole series of documents, decisions, instructions and comments from diverse institutions, the final text of the Directive was published in the *Official Journal of the European Union* in 2009. The Directive under the official title *Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)* was published on November 25, 2009.

At the very beginning we are going to deal with the needs that had caused a development of the new system. For that purpose, some scoreboard reviews of the previous systems, Solvency 0 and Solvency I, their advantages and shortcomings, are given as follows:

The advantages and shortcomings of the system having been initially developed in 1979 are shown in the next table.

Advantages	Shortcomings
Easily applicable calculations	Risks have not been explicitly encompassed
Easy administration	It does not take into account the increase of market complexity
Principles simple to understand	It does not take into account the increased needs to protect policyholders
	Assets evaluation is not agreed upon
	Increase of security level →increase of reserves→ →increase of RSM→ less capital
	Calculations have been done only at the last day of the fiscal year

Table 2 Solvency 0 – pro et contra

It may be seen, even at a glance, that there is a bigger number of shortcomings as compared to the advantages of the Solvency 0 system. The biggest advantage that could have been singled out was the fact that the system was simple to use, whereas the biggest deficiency was the fact that the system did not encompass all the risks. However, in the period when the Solvency 0 system was in

place, the risks had not been present on markets as it was the case today, and the complexity was not the decisive factor.

The advantages and shortcomings that should have been understood as the more advanced version of the Solvency 0, i.e. Solvency I, are shown in the next table.

Advantages	Shortcomings
Despite the advanced solutions, the system remained simple to use	Model is not sophisticated
Administration is simple and cheap	Model is not all-encompassing
The level of policyholders' protection was increased as compared to S 0	In relation to the world standards the system is outdated (Risk-based system (RBC) has already been in use in USA)
In addition to solvency margin amount, margin solvency composition and guarantee fund are also taken into account	Risk management becomes more and more an indispensable segment of business operations – this system does not recognize it
Calculations are continually checked and the insurer needs to have funds at its disposal at all times	Risks are not explicitly encompassed
EU member states can, if they want, to apply even stricter criteria for their own insurance companies	
Results achieved among insurance companies can be mutually compared	

Table 3 Solvency I – pro et contra

If one is to make conclusions from a simple visual impression, it may be said that the Solvency I system needs not to be changed. There are so many advantages of the system, and only a few shortcomings. The simplicity of the system was retained despite certain advancements that had been made. In such a context, there have been neither adjustment costs on behalf of the insurers to the new system, nor the new administration costs. The degree of policyholders' security has been increased with the introduction of new measures. Nevertheless, the market complexity has evidently increased. There are more and more risks on markets that can influence policyholders' funds. In such a context, the insured persons displayed more needs to protect the funds they have invested in their insurance. That is why, the basic deficiency, which had been present even in the first Solvency 0 directives; the fact that the model did not encompass the risk estimate and it did not rely on those results; had been decisive to set up the Solvency II Committee. It was formed based on the conclusions of the meeting held in 1999, when it had been definitely concluded that new regulations, Solvency I, would not be able to respond in an adequate manner to all the challenges that lay ahead the insurers in the future. Changes on the financial markets had been emphasized in particular, as well as the fall of bank interests (which additionally makes the realization of expected returns more difficult), the increase of expected life age, and also the increase in frequency of happenings of sudden harmful events on a larger scale.

The new regulations changed the fundamental principles the previous system had relied on, which, in any case, meant a significant change. The focus shifted from the system based primarily on rules to the system based on risks. The system primarily based on rules implied the solvency assessment on

the accounting values in the insurer's balance sheet. However, the new business dealings conditions surpassed such an approach. The new surroundings and turbulent business operations put new demands in front of insurance companies, so the old system had been upgraded in a way that the estimation of risks that the insurer is exposed to are of primary importance in solvency assessment.

a. Solvency I vs. Solvency II

The differences between the Solvency I and Solvency II systems can be defined as follows:

- The requested solvency margin (RSM) amount has been replaced with minimum capital requirement (MCR);
- MCR should be calculated at least once in each quarter and the supervisor must be duly informed about the calculations results;
- The minimum amount of MCR is determined at the level of 2.0 million EUR (the guarantee fund from S I has been replaced with MCR);
- MCR functions as a security limit – if the amount of funds falls beneath the MCR level, the supervision action is to take place;
- Additional capital requirement in S II is labeled as solvency capital requirement (SCR); this amount represents e initial value for calculations of adequacy of capital requirements at different levels;
- SCR can be calculated with the application of the standard model (a standard formula), or by application of internal models;
- The amounts of MCR and SCR are calculated separately; MCR as its basis uses the technical reserves; whereas SCR is risk-sensitive calculation.

The newly introduced value, which is of key importance for the new system, focuses on the encompassment of risks estimated. It seems much more important to encompass even more risks that an insurer and its funds are exposed to, and in that way evaluate the adequacy of funds than, in accordance to defined ratios and accounting data, to calculate solvency margins amounts, which happen to be a mere application of rules. Therefore, the focus is not on the amount of funds, but on the quality of funds and adequacy of calculations.

Besides a comparison to the Solvency I system, the new solvency assessment system, Solvency II can be compared to a whole series of solvency assessment models. Some models have already been mentioned, and the complete list of the most prominent solvency assessment models across the world in this moment is presented further down:

- Solvency I (Directive 2002/83/EC),
- FTK model – Financial Assessment Framework (the Netherlands),
- SST model – The Swiss Solvency Test (Switzerland),
- FSA model – Financial Services Authority (UK),
- Jukka Rantala Model (JR) – model developed within CEA, as a part of deliberation on the standard approach,
- NAIC model – The National Association of Insurance Commissioners Risk based capital Forecasting model (USD),
- 2002 GDC model – supervision model for German insurance companies (Germany),

- S&P model – Standard and Poor's model,
- Singapore model,
- Australian model,
- Canadian model.

If one is to compare stipulations by IAIS, IAA and European Union, respectively, and which one of those models accepted these stipulations, a conclusion can be reached that the Solvency II model shows nearly similar features as SST and FSA models. The aforementioned two models have the following mutual characteristics for Solvency II.

- IAIS principles
    a. Capital adequacy assessment systems and solvency models are risk sensitive
- IAA principles
    a. One can find approaches based n rules within this model but also the approaches based on principles
    b. Solvency evaluation principles are clear and firmly defined
    c. Implementation implies analytical development of additional instructions
    d. Rules within the framework of developed models firmly a provision of reserves for sudden risks in the course of implementation
    e. Simple, standard approach is initiated in cases when there is no common standpoint on risk quantification, and the influence of which is not crucial
- EU Directives
    a. A distinction has been made between MCR and SCR within a pillar 1
    b. The goal of implementation is to reach the higher harmonization level
    c. SCR is based on a modular approach (which means, in a concrete case, a standard model and internal models, if it is deemed to be necessary)
    d. MCR calculation must be simpler if compared to SCR.

The other mentioned models bear some common characteristics from Solvency II, SST and FSA, but the three models elaborated upon are, in essence, the most similar ones.

Besides previously defined differences, which, primarily, refer to the Pillar I, as a conclusion, the general basic differences between the two systems are presented in the following table.

	Solvency II	**Solvency I**
Valuation of assets	Market consistent value for assets	Market / book value of assets
Valuation of liabilities	Market consistent value for liabilities	Methods not harmonized, but , prudential margins are included within the technical provisions
Available Capital	Adopts a Total Balance Sheet Approach	Partly used
Diversification	Being used	Not being used
Risk mitigation	Being used	Partly used
Solvency Control Levels	SCR i MCR	Only a single control level determined by supervisor
Group issues	Being recognised	Partially recognised

Calibration	On an economic basis using market / historic data and actual experience	Subjective and not specific to the insurance company's circumstances

Table 4 Values of factors for certain kinds of insurance[10]

Towards the end of section, which has been intended to provide a theoretical framework of Solvency II and an appropriate comparison with other solvency assessment systems, a diagrammatic review of work on the Solvency II Directive is presented in the next section, which can best illustrate the system complexity, the current situation and some challenges that need to be met.

b. Solvency vs. Omnibus II

Omnibus II is the Directive that the European Commission proposed in January 2011. If it is to be passed, the directive will introduce certain extensive changes into the Solvency II system.

Under the initial plan, Solvency II should have become an operationally applicable document as of October 2012, and with Omnibus II, the plan has been moved to January 2013. The Solvency II implementation intention is to carry out a somewhat more harmonized and reliable system in the countries comprising European Economic Area (EEA). The new regime has been created in such a way so as to have a larger degree of compatibility with the market practice, but, simultaneously, to be more risk sensitive. The final model calibration has been initially envisaged for the QIS 5 study (from 2010), nevertheless, the active and turbulent market caused a current deliberation on new calibrations, since those from QIS 5, in a certain way, have been inapplicable in some segments.

EIOPA, a supervisor that had emerged in the times of crisis and replaced CEOPS, happens to be institution that, in 2011, showed how much interested it had been for the new regime, Omnibus II. Having adopted the new regime, EIOPA widened its authorities in a way that it acquired more possibilities to exert influence on the regime's detailed technical specifications, but also to assume the role of mediator between the national supervisors and insurance companies at the international level.

Some basic technical corrections will be presented in the text that follows.

The original Solvency II Directive had envisaged a period of adjustment of insurance companies with new capital requirements. There had been no stable technical reserves envisaged for the transition period, which, according to Solvency II, should have been a year long period. Therefore, within a year, an insurance company needs to adjust its business operations with capital requirements as envisaged in Solvency II (specifically, with MCR). At the same time, it should be pointed out that, under the provisions of the previous system (or, rather, the one currently in force) each and every insurance company has a required solvency margin at its disposal. Omnibus II suggests to European Commission an easier transition to the new system through these steps:

- Insurance companies can rely on financial instruments that had been allowed for investment under Solvency II system,
- The implementation of management system should be subdivided into stages, and not applied at once,

[10] The author has taken and adapted the Table from CEA, Insurers of Europe, *Assessing the Impact of Solvency II on the Average Level of Capital*, (Brussels: CEA, 2006.), p. 8.

- Allow a "transition SCR" to insurance companies, which will simulate temporarily a classic SCR (calculated through a standard formula), and, in terms of quantification, needs to meet the following two conditions:
    a. Maximum amount: SCR calculated by a standard formula,
    b. Minimum amount: $MCR + \frac{SCR - MCR}{2}$,
- Allow to countries that are potential members of EEA, and which fulfill the requirements of criteria envisaged in the Solvency II system, to access it in a essential way, and which wait for the formal accession to membership,
- Transition reserves may last at most 10 years.

Yet another problem, with which Omnibus II will be supplemented, relates to the approval of internal models. In view of the complicated revision process procedure and the approval of the internal model for use, it is realistic to expect that it is possible for some internally developing models not to be entirely reviewed by January 2013. In such a case, all the insurance companies, which had invested considerable financial means for the development of the model, could be at loss, since the classic SCR required a larger amount of capital, not having altogether been adjusted to the needs of a specific insurance company. The conclusion was made that, in such cases, the internally developed model, would be only approved internally and allowed to be applied in practice, whereas all the prescribed adoption procedure would have been carried out at some later period.
Also, the procedure of adopting documents within Solvency II, which had been so far determined only in the Lamfalussy process, was supplemented in the following form:

- Level 1: Solvency II Directive, having been adopted in November of 2009, contained the basic principles of the new regime, which were described as "level 1". Some stipulations in the Directive had been mentioned exclusively in the form of rules, whereas some other elements were described in a great detail. In regard to the uneven level of analytics in some sections, supplementary documents are being developed, such as Omnibus II. The new system, a supplement, Omnibus II, envisages a solution of problems, which could be implemented only in the process of reaching co-decisions, which should have taken place in the course of 2012.
- Level 2: this level of Directives presupposes that the regulations on level 2 are to be supplemented by rules and pieces of advice. EIOPA predecessor, CEIOPS, had developed a whole system of pieces of advice and opinions that should have communicated to the European Commission, but only in the form of proposals for supplementing the existing solutions, and not in the form of legally acceptable or binding documents. The Commission is not obliged to act in compliance to such suggestions. The practice showed that the Commission had often disregarded such proposals and opinions. For example, QIS 5 was formulated in 2010 and it reflected the opinion of the Commission at that time. Once the QIS 5 has been adopted and ready for implementation, it is highly likely that there will be a need for QIS 6. However, in view of the deadline for the Solvency II implementation, it will be too late for the QIS 5 development.

In such a context, Omnibus II envisages some changes in the process of adopting documents. In theory, Level 2 documents can be either directives or regulations. Directives, such as those on Level 1, need to be transposed into the laws of member states. This procedure usually lasts a long time and it results in a series of inconsistencies. On the other hand, regulations may have a different character and direct effect. As the outcome, the European Commission insists that the majority of documents should change from the form of directive into regulations.
The majority of legislative documents have been obliged to be implemented even before the date set as a deadline. Some documents are of optional character. European Commission and EIPA have focused on these obligatory segments.
On Level 2, the Commission is not obliged to have consultations with a general public. Once Omnibus II is adopted (the first half of 2012), the rules will have been developed, which should have been effective together with the Directive (the end of 20129. In such a case, the European Parliament and the European Union Council do not have broader powers any more, as it had been the case before. Consequently, the aforementioned institutions have the right to express their opinions, but not detailed discussions. In this way, the procedures could be really speeded up.

- Level 3. This level of the Lamfalussy process implied a development of instructions that would support ideas and requirements from the two previous levels. The process of pre-application for the implementation of the internal SCR model is also carried out.

Omnibus II also introduces the 2.5 level, which presupposes a development of technical implementation standards, which need to be pure technical issues, not burdened with political voting. Under Omnibus II, EIPA had been obliged to develop all the technical documents by the end of 2011, which the European Commission should have approved in 2012.

- Level 4: the last level of the Lamfalussy process demands from the Commission to oversee the implementation and harmonization of measures with Solvency II I member states. If it is deemed necessary, EIOPA is entitled to undertake certain activities.

With the supplementing of the new system, Omnibus II, the changes are being introduced into the system not yet in place, Solvency II, and, primarily, into the following segments: the implementation deadline has been shifted to 2015, relying on Solvency I stipulations have been allowed there where the Solvency II is unacceptable; a category of transition technical reserves has been introduced, larger powers have been given to EIOPA supervisor, and the process of adopting documents has been both speeded up and alleviated within Solvency II.

5. IMPLEMENTATION CHALLENGES

Solvency II has been treated as extremely important event in developed countries. On the other hand, developing countries are trying to discover the easiest way to implement the measure, using available resources, data and knowledge.
When discussing Europe, developing countries have mostly similar structure, similar stage of economic development and very similar problems. Regarding to that, it is easy to recognize the problems they will meet when try to implement the new measure.

The conclusions that are already made in this paper and further statements that will be given are result of research conducted among insurance companies in Bosnia and Herzegovina. Mentioned country is small transitional economy, that can be described as developing. The specific situation is reflected in constitutional organization of the country, so that fact can explain and describe some of the problems and obstacles that will be mentioned. the answers were given by top managers and companies' actuaries.

The survey was conducted at the end of 2012. and gathered the most important market players from both entities in Bosnia and Herzegovina. The questionnaire has three parts: Readiness for Solvency II implementation, Implementation, Technical assessment of Solvency II. Regarding the text's limits, the conclusions will be mentioned:

- insurance companies have no systematic approach to new solvency assessment system; issues are being solved mostly on *ad hoc* system;
- the documentation that insurance companies have is mostly first level documentation (which can be the direction to implementation, but not the guideline);
- insurance companies have no clear vision (so the way of Solvency II implementation is not clear);
- managers of the companies have no specific interest for the new assessment models; namely, the new system seems to be far away in the future, so the management teams still do not have the sense of importance and complexity;
- until the end of 2012 only 20% of the sample were companies that have been trying to implement one part of the new system; the rest of the sample (80% of the companies) is trying to develop the documentation of the strategic level;
- 20% of the surveyed companies have no plans to start the testing in the next 12 months;
- there is no official analysis of compliance of the present legislative with the necessary one;
- the supervisory authorities have no (proc)active role (regarding to the documentation creation, models testing,…);
- actuaries are key persons in the new system implementation (other professionals in companies have no specific interest regarding Solvency II issue);
- the internal models (part of the them or whole models) are seem to be the most challenging issue in the future;
- insurance companies are determinate to apply the standard forms of solvency assessment (without specific interest for the internal modeling or the benefits that can be experienced); namely 70% of the surveyed sample has plans for applying only standard model;
- the market has no necessary data and knowledge;

6. INSTEAD OF A CONCLUSION

Insurance company's solvency has been, by no means, one of the vital parameters for evaluation of an insurance society's worthiness. Classic evaluation systems relied on assessment of the basic insurance society's parameters, such as, in case of an insurer of life insurance, mathematical reserve, premium and assets. The new business operations conditions caused the risks to which the insurance company business dealings are exposed to, become relevant for solvency assessment. The first

assessment models, which also involved risk estimation, implied the evaluation of a small number of risks. Nevertheless, the new solvency evaluation model, Solvency II incorporated into its evaluation the estimation of a large number of risks. It s exactly such a piece of information that makes the assessment model very precise, but, at the same time, also rather difficult for implementation on the territory of EU countries, to whom the system had been initially intended.

Small transitional countries have low level of incentive to test and develop the new solvency assessment model. The model seems to be very complicated and demanding. The lack of knowledge, institutional recognition and understanding the importance of the new system can be the determining factors.

BIBLIOGRAPHY

1. Booth P. et al. Modern Actuarial Theory and Practice. USA: Chapman and Hall/CRC; 2004.
2. Bowers NL. et al. Actuarial Mathematics. USA: The Society of Actuaries; 1997.
3. Buckham D, Wahl J, Rose S. Executive's Guide to Solvency II. USA: Wiley; 2010.
4. Doff R. Risk Management for Insurers: Risk control, economic capital and Solvency II. UK: Risk books; 2007.
5. Sandström A. Solvency: Models, Assesment and Regulation. USA: Chapman&Hall/CRC; 2006.
6. Sandström A. Handbook of Solvency for Actuaries and Risk Managers: Theory and Practice. USA: Chapman&Hall/CRC; 2011.
7. CEIOPS (2008). Own Risk and Solvency Assessment. Germany: CEIOPS. https://eiopa.europa.eu/
8. CEIOPS (2010). Fifth Quantitative Impact Study: Call for Advice and Technical Specification. CEIOPS. https://eiopa.europa.eu/
9. Directive 2002/83/EC of the European Parliament and of the Council of 5 November 2002 concerning life assurance. Official Journal of the European Communities. 2002; L 345/1-52.
10. Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business on Insurance and Reinsurance (Solvency II). Official Journal of the European Union. 2009; L 335/1-155.