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INITIAL EFFECTS OF SOLVENCY II IMPLEMENTATION IN THE EUROPEAN UNION

Prvi efekti primene Solventnosti II u zemljama Evropske unije*

Abstract

Solvency II as a new, risk-based regulatory framework for the insurance sector, setting high requirements in terms of capital adequacy, risk management and reporting for insurance companies, has been applied in the European Union as of January 1st, 2016. The paper deals with the analysis of the first effects of Solvency II on the insurers' balance sheet and solvency, based on the published statistical data. Risk margin sensitivity to interest rates, volatility of the capital, high and imprecise disclosure requirements, incompliance with international financial reporting standards and excessive conservatism of the standard approach are identified as key problems in the concept implementation, and possible ways to overcome these are proposed in the paper. It is concluded that continuous adjustment of Solvency II to the current macroeconomic trends is necessary for the purpose of its successful functioning in practice. Therefore, the process of developing this concept, despite the fact that its application has officially started, cannot be considered as terminated, or its methodology and parameters as permanently defined.

Keywords: *insurance, Solvency II, capital, risk margin, IFRS 17*

Sažetak

Počev od 1. januara 2016. godine, u zemljama Evropske unije primenjuje se Solventnost II, kao nov, na rizicima zasnovan regulatorni okvir sektora osiguranja kojim su postavljeni visoki zahtevi u pogledu adekvatnosti kapitala, upravljanja rizicima i izveštavanja za osiguravajuće kompanije. Na osnovu publikovanih statističkih podataka, u radu se analiziraju prvi efekti Solventnosti II na bilans stanja i solventnost osiguravača. Kao ključni problemi primene koncepta identifikovani su: kamatna osetljivost riziko margine, nestabilnost kapitala, visoki i neprecizni zahtevi za obelodanjivanjem, neusklađenost sa međunarodnim standardima finansijskog izveštavanja i preterana konzervativnost standardnog pristupa, i predloženi su mogući načini njihovog prevazilaženja. Zaključuje se da je, u svrhe uspešnog funkcionisanja u praksi, neophodno kontinuirano prilagođavanje Solventnosti II aktuelnim makroekonomskim kretanjima. Stoga se proces razvoja ovog koncepta, uprkos početku njegove primene, ne može smatrati okončanim, niti se njegovi metodologija i parametri mogu okarakterisati kao trajno definisani.

Ključne reči: *osiguranje, Solventnost II, kapital, riziko margina, MSFI 17*

Introduction

The unified regulatory framework for determining the solvency of insurance companies in the European Union was formally established during the 1970s. In order to appreciate the inflationary impact, Solvency I framework, which made minor changes to the preceding regime, came into force in 2002. In the meantime, new risks have emerged and the effects of certain existing risks have been intensified, but significant progress in the domain of knowledge and instruments that are necessary for risk measurement and management has been made. Over the last two decades, the insurance sector has been exposed to the pressures of pronounced financial market volatility and increasingly frequent catastrophic events that threaten its stability [27, p. 463]. Being characterised by more complex insurance products and investment strategies, intensive consolidation and expansion into new markets and activities, the contemporary business environment of insurance companies poses challenges for supervisory authorities. At the same time, numerous structural shortcomings of the Solvency I concept [8], [24], [30], as well as the failure to recognise the growing role of insurance groups and the convergence in the domain of financial services [32, p. 170], have become limiting factors for further insurance business development, leaving room for regulatory arbitrage between different types of financial institutions and the EU Member States [21, p. 230]. The significantly changed circumstances at the beginning of the 21st century introduced a need for fundamentally different, risk-based approach to insurers' solvency assessment. After 15 years of development, Solvency II, as a new regulatory framework for insurers and reinsurers in the European Union, came into force on January 1st 2016.

The goal of Solvency II is not to increase a priori the overall level of capital in the insurance sector, but to establish high standards of risk measurement and management, according to which the allocation of available capital in this sector would become more efficient in relation to the existing situation. This ensures better protection of policyholders while strengthening, instead of deteriorating, the financial position of insurers [25, p. 238]. From this primary goal stem other, additional goals of this concept, related to increasing the market competition level, insurers' business transparency and flexibility, strengthening customer trust in the insurance, improving stability of the insurance and the overall financial sector of the EU, as well as the harmonisation of supervision over these.

Despite many years of preparation, it was uncertain how the concept will actually work in practice, and how the stakeholders, primarily investors, will react to it. This paper deals with the initial effects of Solvency II implementation in the Member States of the European Union, while respecting the macroeconomic environment in which it is implemented. Although Serbia is not an EU member, the effects of this concept are also relevant to the domestic insurance market due to the reinsurance business, the presence of insurers belonging to insurance groups based in the EU, and the gradual integration of parts of the EU regulations into the local legal framework as part of the accession process. The aim of the paper is to identify key problems that have emerged in the first year of Solvency II application and to propose possible ways to overcome them.
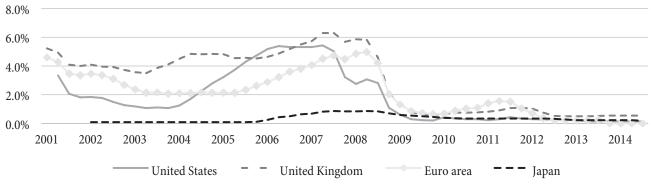
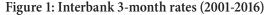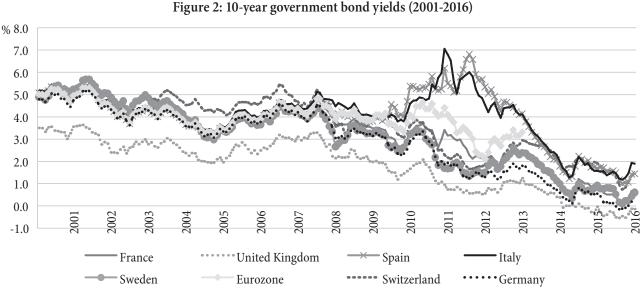## Macroeconomic conditions in which Solvency II implementation started

At the time of introducing Solvency II in the EU countries, the macroeconomic environment has been very complex. The key challenges for European insurers in the post-crisis period are modest economic growth, unfavourable investment climate, regulatory changes, and growing frequency and severity of catastrophic events. Along with the beginning of Solvency II application, there has been a heightened monetary and political uncertainty causing capital market instability. In response to the recession that followed the crisis, central banks of leading economies, including the European Central Bank (ECB), have cut benchmark interest rates, along with intervening to keep them at a low level (Figure 1). Such a monetary policy aims at stabilising the financial system and accelerating economic recovery, but it has led to an environment of persistently very low interest rates [20, p. 28], particularly rates on long-term government bonds, reaching a minimum level in 2016 (Figure 2).

Figure 1: Interbank 3-month rates (2001-2016)

Source: Prepared according to [17].

Figure 2: 10-year government bond yields (2001-2016)

Source: Prepared according to [18].

Long-lasting low interest rates affect assets, as well as liabilities of insurers. On one hand, their investment returns are limited, since the fixed-income securities are prevalent in their investment portfolios. On the other hand, the present value of insurance liabilities is increased when lower rates are used for their discounting. Low interest rates pose a particular risk for life insurers, who are faced with the inability to achieve the guaranteed minimum return for policyholders [26, p. 5].

The prolonged period of low interest rates contributed to a rise in prices of risky assets. Stock prices in developed economies recorded a pronounced increase in the recent years, as evidenced by all-time high values of stock market indices (Figure 3). Capital markets in developing countries suffered significant losses during the same period due to the declining commodity prices and accentuated political instability [31, p. 5]. In conditions of increased uncertainty

and investors' risk aversion, the financial market becomes more vulnerable. Short periods of illiquidity and large price swings are more frequent, while the correlation of returns of different types of assets has been increased [23, p. 12]. Such volatility of financial markets is an additional risk factor for the investment performance of insurance companies.

In its reports on the financial stability of the (re) insurance sector, the European Insurance and Occupational Pensions Authority (EIOPA) provides a qualitative and quantitative assessment of the risks to which (re)insurers are exposed. Based on a survey of national supervisors, it was estimated that low interest rates are a primary risk for insurers, while equity risk was rated as particularly rising (Figure 4).
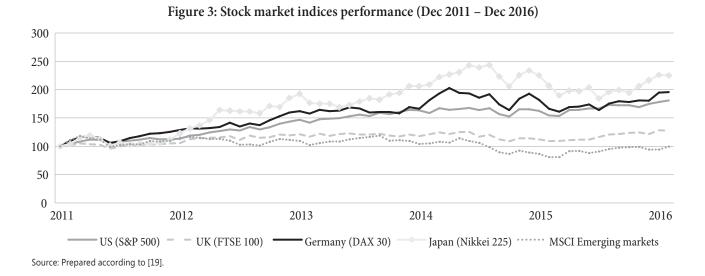
Economic, political and social tensions marked the year 2016 for the European Union. The start of Solvency II
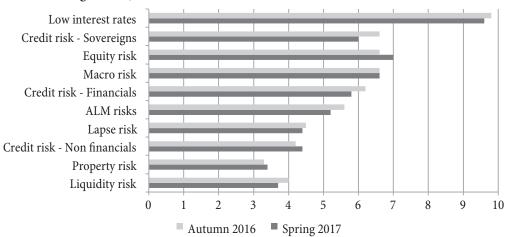
application was followed by a series of events that threatened stability: slow economic recovery and deflation in the eurozone, productivity decline, deepening debt crisis in Greece, British referendum on leaving the EU, migration crisis, tense international relations, terrorist attacks. There are unsettling forecasts that, due to growth of public and private debt and bad loans, a new global financial crisis, such as the one from 2008, could arise. The downfall of interest rates was artificially caused by large liquidity injections into the financial system, particularly in the euro area by the ECB. Since expansionary monetary policy was not followed by growth of the real economy, conditions have been created for the overestimation of certain assets, i.e. for the emergence of financial bubbles, whose burst is a trigger for the crisis. Solvency II is expected to increase

the insurers' resistance to the financial crisis and the ability of supervisors to respond in a timely manner. Since the previous financial crisis occurred during the development of the concept, important lessons that have emerged from that crisis have influenced its final form. Therefore, the possible future crisis would be a proper stress test for Solvency II.

Analysis of statistical data on the results of Solvency II implementation in the EU

In the second half of 2017, EIOPA published the first set of Solvency II statistics regarding the European insurance sector based on regulatory reporting of almost 3,000 insurance companies [16]. The statistics include

Figure 3: Stock market indices performance (Dec 2011 – Dec 2016)

Source: Prepared according to [19].

Figure 4: Qualitative risk assessment for the EU insurance sector

Note: Risks are ranked according to probability of occurrence (from 1, indicating low, to 4 indicating high probability) and the impact (1 indicating low and 4 indicating high impact). The final estimate is the average value of the product of probability and impact assigned to each risk.
Source: [15, p. 46].

aggregated information on the balance sheet, own funds, capital requirements, premiums, claims and expenses per countries of the European Economic Area (EEA) on a quarterly basis, starting from the third quarter of 2016.[1]

On the basis of these data, it is possible to consider the structure of the aggregate insurers' balance sheet at the EEA level as of December 31st 2016, i.e. at the end of the first year since the introduction of Solvency II. The asset side of the Solvency II balance sheet is split into three segments: investments in bonds, equities, investment funds, real estate, derivatives, etc. (which account for 63.5% of the

total assets), assets held for unit-linked and index-linked contracts (with a share of 22.9%) and other assets (Table 1). Observed by countries, investments have the largest share (over 80%) in Germany, Spain, and Croatia. On the other hand, the share of assets held for contracts under which the investment risk in the total assets of insurers is assumed by the policyholder is relatively the largest (about 50% or more) in Luxembourg, Liechtenstein, the UK, Ireland, and Finland.

A detailed breakdown of insurers' investments (excluding unit-linked and index-linked business) at the EEA-level shows that bonds accounted for 61% of the total investment portfolio at the end of 2016 (Figure 5). Thereby, corporate and government bonds are equally

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1 In addition to EU Member States, the data cover Norway and Liechtenstein. All data pertain to solo undertakings, since the data for insurance groups have not been published yet.

Table 1: Structure of the insurers' assets per country at the end of 2016

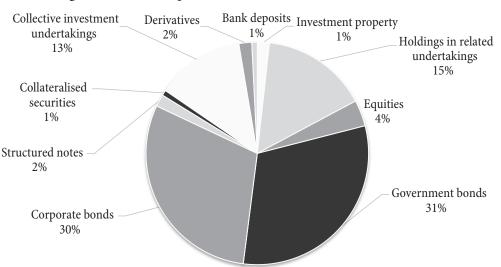|	Investments		Assets held for unit-linked and index-linked contracts		Other assets		Total assets
	Eur mm	%	Eur mm	%	Eur mm	%	Eur mm
Austria	102,945.44	73.8%	19,603.44	14.1%	16,858.94	12.1%	139,407.82
Belgium	244,843.24	75.0%	31,776.92	9.7%	49,879.29	15.3%	326,499.45
Bulgaria	2,293.85	70.6%	57.99	1.8%	896.97	27.6%	3,248.81
Croatia	4,178.12	80.0%	174.93	3.3%	870.61	16.7%	5,223.66
Cyprus	1,734.79	45.3%	1,225.64	32.0%	865.35	22.6%	3,825.78
Czech Republic	12,097.69	70.6%	2,589.71	15.1%	2,450.31	14.3%	17,137.71
Denmark	279,651.36	65.3%	133,035.32	31.1%	15,417.98	3.6%	428,104.66
Estonia	1,008.00	55.5%	630.78	34.7%	177.66	9.8%	1,816.44
Finland	35,711.45	47.2%	34,434.69	45.5%	5,489.41	7.3%	75,635.55
France	2,037,916.14	79.4%	295,054.47	11.5%	234,633.31	9.1%	2,567,603.92
Germany	1,798,693.48	83.1%	100,873.70	4.7%	264,649.53	12.2%	2,164,216.71
Greece	11,116.10	69.7%	2,277.26	14.3%	2,551.48	16.0%	15,944.84
Hungary	4,191.87	49.5%	3,645.93	43.0%	637.24	7.5%	8,475.04
Ireland	76,741.77	22.1%	198,273.73	57.2%	71,534.12	20.6%	346,549.62
Italy	672,752.17	76.0%	139,466.29	15.8%	72,970.24	8.2%	885,188.70
Latvia	347.52	57.8%	50.08	8.3%	203.83	33.9%	601.43
Liechtenstein	2,649.78	9.2%	20,828.50	72.3%	5,329.97	18.5%	28,808.25
Lithuania	665.96	52.7%	463.23	36.7%	134.69	10.7%	1,263.88
Luxembourg	48,583.35	22.7%	114,976.63	53.7%	50,418.98	23.6%	213,978.96
Malta	5,168.03	59.9%	1,234.71	14.3%	2,231.64	25.8%	8,634.38
The Netherlands	272,032.57	53.2%	99,705.77	19.5%	139,241.04	27.2%	510,979.38
Norway	129,563.72	73.7%	25,688.49	14.6%	20,472.81	11.7%	175,725.02
Poland	25,808.33	61.6%	12,193.41	29.1%	3,889.43	9.3%	41,891.17
Portugal	35,273.34	69.1%	11,565.39	22.7%	4,177.49	8.2%	51,016.22
Romania	2,332.10	56.2%	737.31	17.8%	1,083.15	26.1%	4,152.56
Slovakia	4,556.18	69.2%	1,194.56	18.1%	833.83	12.7%	6,584.57
Slovenia	5,585.06	72.1%	1,359.04	17.5%	806.35	10.4%	7,750.45
Spain	246,867.57	82.5%	15,345.22	5.1%	37,109.06	12.4%	299,321.85
Sweden	168,143.77	56.8%	108,407.42	36.6%	19,322.24	6.5%	295,873.43
The United Kingdom	974,697.11	36.0%	1,224,317.27	45.2%	510,259.92	18.8%	2,709,274.30
Total	**7,208,149.86**	**63.5%**	**2,601,187.83**	**22.9%**	**1,535,396.87**	**13.5%**	**11,344,734.56**

Source: [16].

represented in the portfolio. The share of holdings in related undertakings is also relatively high (15.5%).

A comparison with the balance sheet at the end of 2015 reveals that transition to Solvency II did not bring significant changes in the structure of the insurers' assets relative to the terms of Solvency I application. In addition to the increase in the value of assets, there is a greater share of derivatives, loans, as well as of holdings in the related undertakings (Figure 6).

Technical provisions make up 88.4% of the insurers' total liabilities. The dominant part of technical provisions relates to life insurance (50.3%), followed by technical provisions of unit-linked and index linked insurance (27.4%). Technical provisions of non-life insurance (excluding health

insurance) account for only 6.5% of the total insurers' liabilities (Figure 7). Comparison with the structure of liabilities prior to the introduction of Solvency II is not possible due to the different way of classification of data, primarily those related to technical provisions (until the end of 2015, the data were classified per business entities (life, non-life and composite insurers), and from 2016 per types of insurance (life, non-life, health, unit-linked and index-linked insurance) and business lines within them).

The solvency assessment of an insurer is determined by the ratio between the available and the calculated required capital. The concept of Solvency II distinguishes between two levels of required capital – the Minimum Capital Requirement (MCR) as the lower, and the Solvency

Figure 5: Investment portfolio of insurers in the EEA at the end of 2016
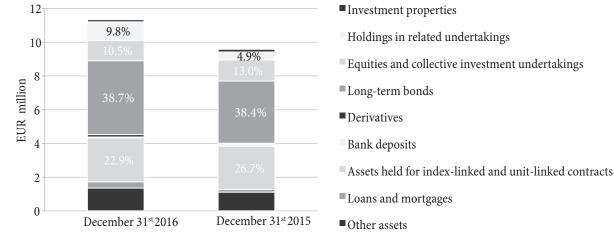

Source: [16].

Figure 6: Structure of assets of insurers in the EEA before and after the beginning of Solvency II application
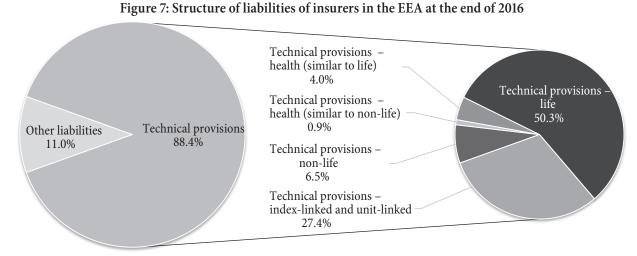

Source: Prepared according to [16]

Capital Requirement (SCR) as the higher one. The MCR is the capital "threshold" under which any additional insurer's business activity exposes the policyholders to an unacceptably high level of risk and entails the ultimate supervisory intervention. On the other hand, the SCR stands as the target capital level, which reflects the insurer's risk profile and offers reasonable assurance to policyholders that payments will be made as they become due. The SCR can be calculated by using a prescribed standard formula approach, or by using a company-specific internal model, with prior supervisory approval.
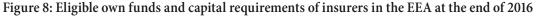
In defining the available capital within Solvency II, the insurers' own funds are classified (into basic and ancillary) and ranked in order to take into account differences in their quality and availability for the absorption of possible losses. In order to be eligible to cover capital requirements, the own funds must meet certain criteria and quantitative limits that Solvency II sets [7, Articles 93-98].
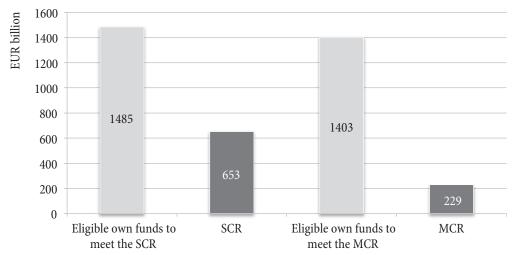
The solvency ratio, as the ratio of eligible own funds and SCR, for the EEA amounted to 2.28 (228%) at the end of 2016, indicating that the European insurance sector was adequately capitalised in relation to the risks assumed. More precisely, this ratio was equal to 217% for life insurance companies, 207% for non-life insurers and 210% for undertakings pursuing both life and non-life business [15, p 32]. At the same time, the eligible own funds were about six times higher than the calculated MCR (Figure 8).

Observed by countries, there are significant variations in coverage of the MCR, while the solvency ratios are

Figure 7: Structure of liabilities of insurers in the EEA at the end of 2016

Source: [16].

Figure 8: Eligible own funds and capital requirements of insurers in the EEA at the end of 2016

Source: Prepared according to [16].

relatively uniform. The lowest weighted average solvency ratio of 1.43 (143%) was achieved in Latvia, while the highest value of this ratio of 3.98 (398%) was recorded in Malta (Figure 9).

The EEA average shows that more than one half of the net basic SCR is composed of market risk, while non-life underwriting risks rank second highest. There are significant deviations in terms of the SCR structure between the countries. The share of market risk ranges from 77% in Austria to 26% in Lithuania. Similarly, the share of non-life underwriting risks varies from 72% in Latvia to 14% in Finland. The solvency capital requirement at the EEA level is reduced by almost one third on average due to the diversification benefit (Figure 10). Observed by countries, diversification benefit is the smallest in Denmark (24%), and the largest in Slovakia (45%).

It is interesting to consider the assessment of insurers' solvency through the prism of Solvency II in comparison with the previous regulatory framework, as well as with the expectations that were established based on the last conducted quantitative impact study (QIS5) in the EU.

Measured by the ratio of capital requirement (MCR and SCR) coverage, the capital adequacy of an average European insurer is at a higher level after the first year of Solvency II application, compared to the results of QIS5. On the other hand, under the Solvency I regime, eligible own funds were lower, while the required capital was approximately at the MCR level. Of course, the findings of such comparison should be interpreted with caution (the calculations relate to different years, the sample of companies that participated in QIS5 is narrower than the total number of companies applying Solvency II, and the concepts of Solvency I and Solvency II are based on substantially different postulates, which is why they are not directly comparable).

Areas that require further improvements

The results of stress tests show that the first year of Solvency II application was successful, and that insurers were prepared to face it. The values of solvency ratios at the end of 2016 confirm that European insurers are adequately
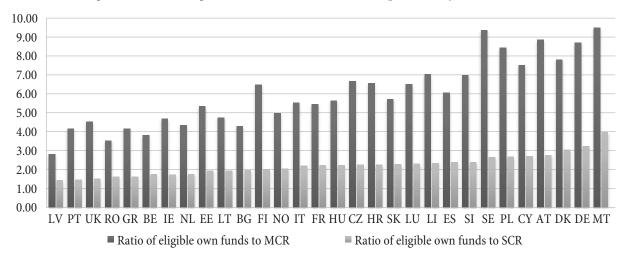
Figure 9: Ratio of eligible own funds to MCR and SCR per country at the end of 2016

Source: Prepared according to [16].

Table 2: Capital requirements and surplus – Solvency II vs Solvency I and QIS5

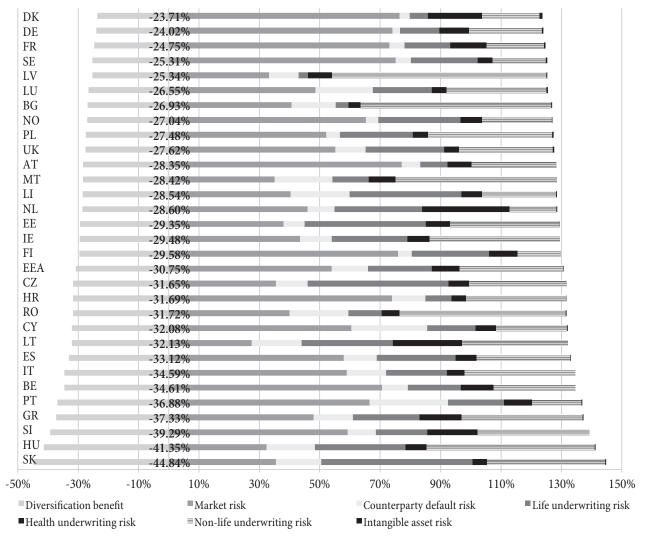| EUR billion	Solvency I (2015)	QIS 5 (2010)		Solvency II (2016)	
		SCR	MCR	SCR	MCR
Eligible own funds	1,045	902	861	1,485	1,403
Capital requirement	289	547	185	653	229
Surplus	756	355	676	832	1,174
Ratio of capital requirement coverage	362%	165%	466%	227%	613%

Source: [16] and [11].

Figure 10: Breakdown of net basic Solvency Capital Requirement per country at the end of 2016

Source: [15, p. 49].

capitalised despite the decline in interest rates. EIOPA reported that 100% of companies tested met their minimum capital requirements and 99.98% met the Solvency Capital Requirement [14]. However, it is obvious that several areas require improvements. Changes are necessary to ensure that the new regulatory framework will justify the extensive resources and efforts that have been invested in its development, but also to avoid undesirable incentives for insurers, which could affect the entire European economy. The first review of Solvency II by the European Commission should be completed by December 31st 2018 [4, Recital 150].

The most prominent problematic areas are: risk margin sensitivity to interest rates, focus on capital adequacy while neglecting capital stability, high and vague disclosure requirements within the pillar III, incompliance with international financial reporting standards (IFRS),

excessively conservative standard approach, insufficiently precise measurement of certain types of risks (catastrophic risk, currency risk, longevity risk, etc.). Further in the text we consider some of the mentioned problems in Solvency II application and propose possible ways to overcome them.

Risk margin sensitivity

In the Solvency II regime, the risk margin is formed above the best estimate of an insurer's technical provisions. The risk margin is intended to increase the technical provisions to the amount that another hypothetical (re)insurer would require as a compensation for taking on liabilities arising from the portfolio of the given insurer. It is therefore viewed as a "reward" for exposure to risk of future experience being worse than the best estimate assumptions.

The risk margin is determined by using the cost of capital method, i.e. based on the cost of holding capital to cover risks that cannot be hedged. Accordingly, it is regarded as the present value of costs of holding capital in the amount of the SCR for the hypothetical insurer, throughout the entire period until the expiration of the portfolio liabilities. Projected SCR amounts are multiplied by a fixed cost of capital rate *CoC* of 6% per annum and then discounted by using risk-free discount rates. The sum of discounted values over all the covered years $t = 1,2,...$ is the risk margin of the insurance company (*RM*) [12, p. 87]:

$$RM = \sum_{t \geq 0} CoC \cdot \frac{SCR_t}{\left(1 + p_{t+1}\right)^{t+1}} \qquad (1)$$

where:

CoC - cost of capital rate (6%),

SCR_t - projected solvency capital requirement at the end of the year *t*,

p_{t+1} - discount rate.

Sensitivity of the risk margin to interest rates arises because the lower current interest rates reduce the discount rate applied in the calculation, and thereby increase the present value of the future SCRs, or the overall risk margin. This problem is particularly pronounced in countries where a significant part of the insurance portfolio traditionally relates to long-term annuities. That is the case with the United Kingdom, for example. With the drop of interest rates between January and September 2016, the overall risk margin of major UK life insurance companies rose from around GBP 30bn to nearly GBP 44bn. According to the Bank of England's estimates, a 100-basis point reduction in interest rates increases the aggregate risk margin for these firms by around 27%. Conversely, a 100-basis points increase in rates would lower the risk margin by around 20% [29, p. 6]. The extent of the problem of high risk margin is illustrated by the fact that it currently reaches 50% of the total technical provisions of UK insurers, in contrasts with a figure of below 10% in the quantitative impact studies (when market interest rates were higher) [1, p. 46].

Interest-rate sensitive and high risk margin affects the overall balance sheet of the insurer. Methodology for risk margin calculation has been defined in a completely different economic environment. Considering a significant drop in market rates, including negative rates in some markets at some maturities, the cost of capital rate of 6% is excessively high and incoherent with the reality of the cost of capital nowadays. A sensible solution for the problem of high risk margin in a low interest rate environment is to lower the cost of capital rate and to vary it in line with the risk-free rate.

Capital volatility

The impression at the beginning of Solvency II implementation was that insurance companies are mainly focused on meeting the requirements regarding capital adequacy, while its stability was neglected. In itself, this concept introduces additional volatility in the insurer's balance sheet, since assets and liabilities are valued at fair value. More precisely, assets that are valued on the mark-to-market basis cover liability cash flows that are discounted at the risk-free term structure of interest rates. In such conditions, any movement in interest rates is reflected not only on assets, but also on technical provisions of insurers. At the same time, the implicit solvency margin that existed when technical provisions were expressed at their nominal value is eliminated. Therefore, adjustments to the rates used to discount the insurance liabilities (i.e. value adjustment and matching adjustments) [13, p. 16] are designed for products with long-term guarantees in order to increase the balance sheet resistance to artificial fluctuations caused by short-term market movements and thus to reduce systemic risk. The risk-free rates are adjusted upwards, which reduces the present value of insurance liabilities and increases the insurers' own funds.

The variability of the balance sheet, and therefore the capital of the insurer, is becoming more pronounced in unstable macroeconomic conditions. Capital fluctuations reflect the volatility of the financial market. Sensitivity analyses have shown that a drop of 25% to 30% in equity markets can lead to a fall in the Solvency II solvency ratio of as much as 20 percentage points [5]. Insurers are required to hold capital above a certain minimum. Since capital is variable, it may happen that it falls below the set minimum, when it is necessary to provide additional

capital. This issue is especially important from the investors' perspective, because dividend payments are becoming constrained since they affect negatively the solvency ratio.

In accordance with the forward-looking character of the new regulatory framework, the sensitivity of the solvency ratio to market movements deserves special attention. Therefore, it is necessary to develop a more complex system of intervention levels so that unfavourable development could be corrected in a timely fashion. There should be additional points of intervention in addition to the existing two (when a company's eligible capital falls below the SCR or the MCR). A relevant example is the Risk-Based Capital (RBC) model for insurers in the United States, where a number of measures to be undertaken by the insurer or the supervisory authority have been defined, depending on the ratio of the available and calculated required capital [2, p. 64].

High and imprecise disclosure requirements

Along with great technological, systemic and analytical challenges, Solvency II has certainly brought about a significant progress in terms of volume and quality of insurers' data that have become available to stakeholders. Disclosure through the Solvency and Financial Conditions Reports (SFCRs), as part of the pillar 3, which have been published for the first time in 2017, aims to achieve market transparency and foster market discipline. These reports contain both quantitative and qualitative information. The submission date is within 14 weeks following the end of a financial year, and the SFCRs must be available on the company's website for a minimum of 5 years. These reports are expected to increase the harmonisation of information disclosure by insurers across the EU, which will allow comparison of their financial position by all market participants. Insurers are required to disclose information on everything, from external environment through the key business lines, business and investment performance, risk exposure and management systems, assumptions and methodologies for valuing assets and liabilities, required and available capital.

Although most insurers were focused on the first two pillars in the preparation stages for Solvency II, it turns out that the disclosure requirements within pillar 3 are very extensive and diverse. Rather vague rules regarding the SFCRs preparation are the source of confusion for insurers. EIOPA provides general guidelines for their composition and structure, which the insurers are required to fill in at their sole discretion. Significant variations in the quality of the reports published in 2017 were observed due to differences in the interpretation of these guidelines. Consistency of the SFCRs is not achieved, not even within the insurance groups. It is particularly difficult to strike a balance between the regulatory requirements for transparency and the need to protect the confidentiality of information from the competition. Information that was previously confidential is now made available to the public. Thereby, the SFCRs are not the only new reports whose preparation is mandatory within the Solvency II framework (Table 3).

Table 3: Overview of pillar 3 reports within the Solvency II framework

Report	Solvency and Financial Condition Report - SFCR	Regular Supervisory Report - RSR	Quantitative Reporting Templates – QRTs
Audience	Publicly disclosed document	Supervisor only	Supervisor, elements for public disclosure
Frequency	Annually	Every three years	Quarterly (supervisor only) and annually
Contents	It contains quantitative and qualitative information and estimates about the insurer (activities and results, risk profile, principles of valuation of assets and liabilities, capital management, significant events in the previous year) and the market in which the insurer operates.	It contains detailed quantitative and qualitative information on business development, insurer's risk profile, valuation of assets and liabilities. It is structured in the same way as SFCR, but contains information that is either too detailed or too confidential for public disclosure. Unlike SFCR, it also includes projections of the business development in the future.	Electronic reporting sheets with detailed information on the insurer's financial solvency position, including capital requirements. Enable the supervisor to keep pace with the key indicators of the financial health of insurers, as well as to monitor their trends.

Source: Prepared according to [3].

The preparation of thorough and accurate reports in short time frames is a special challenge for insurers. There is a risk that due to the great efforts and time invested in the collection of data and the preparation of reports, the management will not be able to see what the data actually tell about the company and its environment. It is possible that some of the pieces of information requested have not existed so far, so the insurer must provide conditions to generate them. It is also possible that for some pieces of information that already exist, the processes in which they are generated are slow, and have to be accelerated and further automated and rationalised [9, p. 8]. Reporting cycle acceleration demands significant investments in human resources, processes, and technology. In order for the disclosure requirements to be met effectively, the cooperation between the financial, actuarial and risk management functions in the preparation of information is necessary in order to avoid working in "silos" and cost duplication. All three pillars of Solvency II should be included in the integrated reporting system within the insurance company.

(In)compliance with IFRS

Under Solvency II regime, there is a gap between financial and regulatory reporting. At least two balance sheets (according to IFRS and Solvency II) create confusion for their customers, undermining investors' confidence in the insurance sector. Due to differences between Solvency II and IFRS, even the management is faced with the dilemma of selecting the primary metrics in evaluating the performance of the insurance company. Tracking the movement of the insurer's capital position over time is also difficult.

In May 2017, the International Accounting Standards Board issued a new standard, IFRS 17 "Insurance contracts", marking the beginning of a new epoch for insurers' accounting practice. This standard is expected to increase the harmonisation and transparency of reporting, primarily the disclosure, related to (re)insurance contracts. Unlike its predecessor, IFRS 4, which allowed insurers to apply national accounting standards (resulting in many different approaches), IFRS 17 defines clear and consistent rules that should significantly increase the comparability of insurers' financial statements. However, experts are not optimistic, given that IFRS 17 will be mandatory from 2021, as well as having in mind that the standard is quite complex (as a hybrid between book-value and market-value accounting), which will require time for its understanding. A particular issue relates to the costs for insurers arising from the harmonisation of accounting practices with the new standard. It is forecasted that the costs incurred by IFRS 17 will be comparable or higher than the costs of applying Solvency II. According to the European Commission estimates, the cost of Solvency II implementation for the EU insurance sector was between EUR 3 and 4 billion [10]. Of course, those insurers that already apply Solvency II will be in a better position.

The key changes brought by the IFRS 17 relate to insurance liabilities measurement and revenue recognition. The general model that is being introduced for the valuation of insurance liabilities is the Building Blocks Approach (BBA). Under this approach, insurance liabilities are measured at the level of discounted and probability-weighted average of future cash flows expected to arise as the insurer fulfils the contract, increased by an explicit Risk Adjustment (RA) and a Contractual Service Margin (CSM)[2] (Figure 11).

Contractual service margin is measured as the difference between the risk-adjusted present value of expected inflows and outflows at contract inception. If the contract is expected to be loss-making, CSM is negative and recognised in the income statement. Otherwise, if the contract is expected to be profit-making, CSM is positive and recognised as a liability (unearned profit). Therefore, upon initial recognition a contract can be classified as onerous; profitable, with no significant risk of becoming onerous; and profitable, with significant possibility of becoming onerous (remaining contracts). With the subsequent measurement of the Contractual Service Margin and its allocation to profit or loss for the period, the profit has been recognised for the coverage that was provided in that period. Similar to the risk margin,

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2 Simplified measurement of liability for the remaining coverage for insurance contracts with short-term coverage is allowed in the form of Premium Allocation Approach (PAA).

the Risk Adjustment under IFRS 17 is the compensation that an entity requires for bearing uncertainty about the amount and timing of cash flows that arise from non-financial risks.

There are multiple similarities between Solvency II and IFRS 17. Both concepts are principle-based instead of rule-based. Within them, assets and liabilities are mainly valued at fair value, which increases the volatility of the balance sheet. In measuring insurance liabilities, expected future cash flows are discounted and adjusted for risk. Offsetting assets and liabilities or income and expenses arising from insurance and reinsurance transactions is prohibited in both concepts. However, as these two regimes have different purposes, it is not rational to expect them to be identical.

The primary goal of Solvency II, as a prudential regulatory regime, is to enhance the level of policyholder protection. Hence, in terms of reporting and disclosure, this concept is focused on the balance sheet and capital requirements needed to provide the solvency of the insurer. On the other hand, IFRS 17 aims to establish uniform accounting standards for (re)insurance contracts in order to increase the transparency and comparability of the insurers' financial statements, which is primarily in the interest of investors. For a financial reporting regime, not only the financial position at the balance sheet date but also the performance in the period is important [28, p. 1]. Therefore, the focus of IFRS 17 is on the income statement and the insurer's available capital.

Hence, there are numerous differences between Solvency II and IFRS 17. Firstly, Solvency II equally applies to all contracts issued by the insurers. However, investment contracts issued by insurers which do not transfer significant insurance risk (and that do not contain a discretionary participation feature) are accounted as financial instruments under IFRS 9, instead of IFRS 17. Next, according to Solvency II, insurance liabilities are classified into homogeneous risk groups, at least at the level of prescribed lines of business. IFRS 17 requires information to be tracked at the level of groups into which contracts are classified according to their expected profitability at inception and the time at which they were written (with each group covering no more than a year

of new business). A different way of classifying contracts may result in a higher level of granularity in the tracking of liabilities movement under IFRS 17, which requires additional data and models.

Solvency II defines the curve of the risk-free rates used for the purpose of discounting liabilities in different currencies, while IFRS 17 does not specify either the yield curve or the single discount rate, but only approaches for its derivation (bottom-up and top-down). Solvency II prescribes the method of calculating the risk margin, which is based only on the net of reinsurance position at the entity level. IFRS 17 does not specify the method of calculating Risk Adjustment (RA), which is measured separately for the gross liability (or asset) and reinsurance held, at the level of groups of contracts [28, p. 2].

Within Solvency II, the profit arising from an insurance contract is recognised immediately at contract inception, i.e. with the receipt of the insurance premium. Under IFRS 17, profit recognition is spread over the coverage period by the inclusion of a Contractual Service Margin which is not present under Solvency II. In accordance with IFRS 17, acquisition costs are included in the fulfilment cash flows, resulting in their implicit deferral over time, while in Solvency II there is no concept of deferred acquisition costs [22, p. 16]. Finally, disclosure under IFRS 17 will be even more transparent due to more stringent requirements.

It can be concluded that the differences between the two concepts are primarily related to the recognition and measurement of insurance liabilities, which affects the entire balance sheet. Since the insurers' systems and processes have recently been innovated, it is expected that they can be used as a starting point for the application of IFRS 17. However, the new, stricter and more complex reporting requirements impose further changes to information systems that will enable processing large amounts of data with particular emphasis on their quality and automation of calculations. It is therefore important that insurers design their own reporting systems in a way that maximises flexibility in order to link the requirements for financial and regulatory reporting as much as possible. The synergy space should be sought primarily in the field of data collection and modelling. Therefore, cooperation

of all sectors within the insurance company, in particular of the accounting and actuarial function, is necessary. Similarities between the two regimes should be used as much as possible. For example, there is a high degree of overlapping of cash flows in measuring liabilities (with certain differences in the scope of acquisition and administrative costs), the same discount rates for both metrics can be used in some business lines, risk adjustment can be determined in the same way as the risk margin, and so forth. The differences between the two regimes, on the other hand, are a key landmark for future insurers' systems and processes changes.

Overly conservative standard approach

Since it corresponds to an average insurer, the standard approach for solvency evaluation abounds with different approximations. In order to be uniformly applied, this approach should be simple, but conservative. Consequently, it can result in excessively high capital requirements compared to the real risks of a particular insurer. Further in the text, we shall list some of the many aspects in which the Solvency II concept is excessively conservative.

When determining technical provisions, an insurer is required to neglect real returns on the assets used to cover them, i.e. to assume that all assets are invested at a risk-free rate. Although interest rates are currently low, there is still a possibility of achieving a certain return on the basis of investments in forms of assets such as shares, real estate and corporate bonds. Such an approach results in greater present value of future cash flows needed to settle the obligations towards the policyholders in the future, that is, in larger technical provisions than actually necessary.

When determining the SCR for non-life underwriting risks, earned premium is used as a volume measure for premium risk measurement. The insurers whose premium is adequate are "penalised" with relatively higher capital requirements than those insurers whose premium is underestimated. The standard approach thus creates incentives for insurers to underestimate the premium. The premium risk volume measure should be based on

a technical indicator (loss ratio or combined ratio) that reflects the adequacy of premiums in relation to the risks assumed.

Also, the risk-mitigating effects of reinsurance and geographic diversification are not sufficiently taken into account in calculating the SCR for premium risk coverage. Non-proportional reinsurance, as one of the most important risk management instruments used by non-life insurers, is particularly inadequately treated. The risk factor is reduced by 20% for non-proportional reinsurance only for three lines of business: motor vehicle liability insurance, fire insurance and third-party liability insurance [12, p. 256], while the risk-mitigating effects of this reinsurance type are neglected in all other segments of the non-life insurance business. Similarly, the risk diversification effects in the case of performing insurance activities in several countries within a region, although significant, were not taken into account in the standard approach.

The solvency capital requirement for longevity risk in life insurance corresponds to the change in the value of basic own funds in the case of an instantaneous permanent decrease of 20% in mortality rates used for the calculation of technical provisions [12, p. 207]. If the best estimate of future cash flows already included the expected mortality reduction, the "shock rate" of 20% used in this scenario is too high and should be reduced.

As they are based more heavily on data related to a particular insurer, internal models can provide a more accurate picture of its risk profile. Insurance companies will be motivated to use internal models for the purposes of risk measurement and solvency evaluation if higher costs of their implementation can be compensated with relatively lower capital requirements compared to the standard approach. Large companies with great possibilities of risk diversification and mitigation through other risk management methods, whose effects cannot be fully recognised in the standard approach, are primarily interested in the internal models [25, p. 280]. Having in mind the relatively low degree of development of the domestic insurance market, it is not realistic to expect a more significant application of internal models for determining the solvency capital requirement in this

market in the near future. At the same time, the market should be timely prepared for the inevitable forthcoming risk-based regulatory framework for determining the solvency of the insurers, in which quantitative impact studies have a special importance.

Conclusion

Under contemporary dynamic approaches, the solvency of insurance companies is determined on the basis of measurement of risks that threaten their business. The most relevant example is Solvency II, as the new regulatory framework for insurance companies in the Member States of the European Union. The key novelties Solvency II brought to insurers are the explicit recognition of a great number of risks and their interdependencies in the calculation of capital requirements, high standards in terms of capital adequacy and risk management, prudential regulation rather than quantitative investment constraints, the possibility of applying internal models for calculating capital requirements and the shift from rule-based towards principle-based supervision of the insurance sector.

The paper analyses the initial effects of Solvency II implementation on the financial position of the EU insurers. The moment of introducing Solvency II is delicate, considering the complex macroeconomic environment. European countries in the post-crisis period achieve modest economic growth, interest rates are at an all-time low level, and the volatility of financial markets is extremely high. Nevertheless, an analysis of the available data shows that, even in such circumstances, the insurance sector is adequately capitalised in relation to the risks assumed. At the EEA level, most of the total solvency capital requirement is intended to cover market risks, while non-life underwriting risks rank second highest. Compared to the terms of Solvency I application, transition to the new regulatory regime did not cause significant changes in the insurers' balance sheet structure.

At the very beginning of Solvency II implementation, there are obvious advantages, but also areas that require further improvements in order for this concept to be effective and to justify the high investments during its perennial development. In a low interest rate environment and under the current method of calculation, the risk margin is too high, particularly affecting those insurers whose significant portion of the portfolio relates to long-term annuities. Short-term market movements cause the volatility of the balance sheet and therefore of the insurers' capital, thus becoming a source of systemic risk. Insurers are facing high and imprecise disclosure requirements. Insufficient alignment of financial and regulatory reporting generates additional costs for insurers and hinders the assessment of their performance for investors. Exaggerated conservatism of the standard approach can result in excessively high capital requirements relative to the real risks of a particular insurer. Possible ways of overcoming the identified problems in Solvency II application which are proposed in this paper include lowering the cost of capital rate in calculating the risk margin and its variation in line with the risk-free rate; introducing a more complex system of intervention levels, depending on the ratio of available and required capital; the development of a flexible reporting system and the cooperation between all the sectors within the insurance company in generating information and preparing reports. Also, possible adjustments of the standard approach in order to take into account the insurer's risk profile more accurately are being considered.

High costs for insurers generated by Solvency II are ultimately remitted to the policyholders. Therefore, the improvement of this concept is in the mutual interest of both parties. Changes should be directed towards simplifying the concept and eliminating unnecessary bureaucracy, which increases the costs of its implementation. In the turbulent macroeconomic environment, the impact of the many risks could not have been anticipated when defining the concept parameters. The time in which the application of Solvency II started is essentially different from the time in which its development began. It is obvious that the transition to the new regulatory regime would have been easier in an environment with higher interest rates and stable financial markets. For the purpose of successful functioning in practice, it is necessary to continuously adjust the methodology and parameters of Solvency II to the current macroeconomic trends.

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