Financial Risk MVE220 - Reading Project
SOLVENCY II

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1 Introduction

In this paper, the European rules for the insurance companies that today exhibit within the European market, that is, Solvency II is briefly examined. Solvency II is a Directive in European Union law (EU) that codifies the EU insurance regulation [1]. Primarily this concerns the amount of capital that EU insurance companies must hold to reduce the risk of insolvency i.e., for being able to avoid the probability for not having the ability to pay its policyholders of interest.
Solvency II was first implemented in January 2016, as an improvement of its precursor Solvency I. The reason for the introduction of the Solvency II into the European Market, was due to the fact that, the regime did not take into account some financial risks, such as; credit risk, operational risk and market risk – that the different firms of interest could suffer from [2]. This meant that, different categories of high and low-risk firms were considered as one homogeneous group of firms. Hence, the provided framework for the risk measurements with respect to the insurers was not consistent.
The insurance sector is today one of the major interests in the financial market, and beside this, it has an important functionality in today's society where the dependency among industrial firms and people's lives are correlated with insurance companies. In fact, this phenomenon, were noticeable during the Covid-19 pandemic that affected all types of businesses across the different segments, in particular, restaurants and airline companies [3]. Thus, having the insurance companies defaulting in the society might lead to severe consequences, that will certainly have a major negative impact on all interests. For this purpose, Solvency II introduces a rigorous supervisory regime that seeks to recognize the complexity for the insurance companies. By this, the overall aim is to increase the protection for the policyholders and the capital efficiency for the insurance companies of interest, that is, by implementing modern risk management techniques [4][1].

2 What is solvency II?

Solvency II is a risk-based regulation for insurers in the EU governing how they are funded and was implemented in Jan 2016. Solvency II replaced Solvency I which represented 14 directives and allowed several supervisory regimes in different member states. Solvency II applies a robust and consistent risk and governance framework providing transparency to insurers' problems and ensures timely intervention.
Solvency II was implemented as EU legislation and is therefore effected through a standard framework, namely the “Lamfalussy Process” [5]. This framework has four levels and specifically for solvency II these levels are:

- Level 1 - “Directive on the taking up and pursuit of the business of insurance and reinsurance”.
- Level 2 - “Implementing measures”. These measures spell out the detailed

requirements that insurers must meet.

- Level 3 - “Guidelines”. One of the tools used to increase supervisory convergence.
- Level 4 - “Post-implementation enforcement”. The European Commission is responsible for ensuring that member states are complying with the legislation. Enforcement action will be taken if that is not the case.

Solvency II was implemented with key objectives in mind. These are to obtain an improved consumer protection, modernised supervision, a deepened EU market integration and increased international competitiveness of EU insurers [6]. Solvency II includes 3 areas which are commonly known as pillars. These are “Quantitative Requirements”, “Governance & Supervision” and “Reporting & Disclosure”.

3 Pillar I - Quantitative Requirements

Pillar I sets out quantitative requirements, including the rules to value assets and liabilities, to calculate capital requirements and to identify eligible own funds to cover those requirements [2]. For this summary to be concise enough we choose to omit areas such as the Solvency II balance sheet, valuation of assets, best estimate liability and risk margin. Instead we focus on the two thresholds: Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR) - and how they are computed.

3.1 Solvency Capital Requirement (SCR)

This threshold is built on a Value at Risk model (VaR) at a 99.5% confidence interval over a one year time horizon. Identically expressed, the insurer must be able to withstand the worst annual loss expected over the next 200 years. Breaching the SCR-threshold leads to supervisory intervention and increased supervision.
The Solvency II legislation came with a “Standard formula” of prescribed stresses and calculation parameters for their SCR-calculation[4]. We present the calculation of the Basic Solvency Capital Requirement (from [7]):

$$\text{Basic SCR} = \sqrt{\sum_{i,j} \text{Corr}_{i,j} \times \text{SCR}_i \times \text{SCR}_j}, \tag{1}$$

where SCR_i and SCR_j are replaced by:

- $\text{SCR}_{\text{non-life}}$ (the non-life underwriting risk module),
- SCR_{life} (the life underwriting risk module),
- $\text{SCR}_{\text{health}}$ (the health underwriting risk module),

- $\text{SCR}_{\text{market}}$ (the market risk module),
- $\text{SCR}_{\text{default}}$ (the counterparty default risk module).

The formulas used will take correlation of the risks into account since Solvency II want to measure the aggregated risk the insurers face. The correlation matrix $\text{Corr}_{i,j}$ is presented in the source.
However, Solvency II also provides for the possibility that insurers use their own models for calculating their SCR, although this is subject to supervisory approval.

3.2 Minimum Capital Requirement (MCR)

It should be pointed out that the MCR is not an addition to the SCR, but a subset of it. The MCR is computed by targeting a Value at Risk model with 85% confidence. It is then floored at 25% or capped at 45% of the SCR, i.e. it cannot fall outside of this range. This is used as an ultimate point of supervisory intervention, below which the company would lose its authorisation.

4 Pillar II - Governance & Supervision

The main goal of Pillar II is to ensure good quality of risk and capital estimates covered in Pillar I, in order to ensure company's solvency at all times. This is done by regulations around governance and risk that can be divided into seven main components.

1. **Fit and proper requirements**: All persons that are running the undertaking or have other key functions should have adequate professional qualification, knowledge, experience, and good repute and integrity, in order to assure healthy, careful, and risk-avoiding management.
2. **Risk management**: Insurance and reinsurance undertakings should have an effective risk management system that includes strategies and processes that identify, measure, monitor, and manage risks, both individually and collectively.
3. **ORSA**: Insurance and reinsurance undertakings should regularly conduct individual risk and solvency assessment, to assure appropriate risk management. In addition, risk and solvency, assessments should be taken into account in company's strategies and decisions.
4. **Internal control**: Insurance and reinsurance undertakings should have effective internal control system for reporting, accounting, and internal control framework.
5. **Actuarial function**: Ensure appropriate methodology, models, assumptions and data used in the calculation of technical provisions and inform management about the reliability of the technical calculations.

6. **Outsourcing**: Outsourcing functions and activities, should not impact operational risk and the governance system. In addition insurance and reinsurance undertakings should notify supervisors in advance about outsourcing of crucial functions.

7. **Internal audit**: The internal audit function evaluates competence and effectiveness of system governance, and should be independent of the operational functions

5 Pillar III - Reporting & Disclosure

The last element in the structure of the Solvency II directive, is the Pillar III. Solvency II promises the market, with respect to Pillar III, that the insurers provide every stakeholder i.e., the market and thus the policyholders; frequent, reliable and transparent reporting's. By this, Pillar III introduces extensive quantitative and qualitative disclosure requirements such that the insurers must implement. Hence, the characteristics of Pillar III can be summarized to; Transparency, Forward-looking and frequency [8]. In particular, this is managed by Solvency and Financial Condition Report (SFCR), Regular Supervisor Report (RSR) and Quantitative Reporting Templates (QRT). How are these regulatory purposes designed and implemented?

6 SFCR - Solvency and Financial Condition Report

The Solvency and Financial Condition Report is a report that is provided by the insurers on yearly basis, which contains qualitative and quantitative information[8]. That is, it provides all the interests in the public a deep overview of the company's solvency and financial condition, but in addition, covering areas such as; its risk profile, business performance and a description of its capital management [9].

7 Regular Supervisor Report (RSR) and Quantitative Reporting Templates (QRT)

In contrary, the Regular Supervisor Report is a non-public report that is solely given to the supervisors [10]. The undertakings of insurers, submit this report jointly with the Quantitative Reporting Templates, to the local National Competent Authority (NCA) every three years (full and complete) and in a short summary every year [11]. However, RSR requires that insurers submit the the QRTs for audit on an quarterly and yearly basis also. As with the SFCR, the RSR includes both qualitative and quantitative information. The main fundings in the QRTs, can be seen as the core of the RSR. That is, it covers areas for the insurers of interest such as; minimum capital requirement, solvency capital requirement and the insurers total assets and fundings. Hence, the QRTs, by being submitted more frequently jointly with the semi-full RSRs, offers an quick and efficient way of auditing for the supervisors at the NCA [11].

8 Conclusions & Own Opinios

Solvency II is the biggest reconstruction in EU insurance regulation in the past 30 years, whereas it has taken more than ten years to develop and implement it.

We believe that the implementation of the Solvency II is a good strategic move compared to the the predecessor i.e., Solvency I. This is due to the fact that, Solvency II shows consideration against the insurance firms that exhibit riskier investments and vice versa. By other means, the new regulation will require that the insurance firm that has riskier investment will of course naturally also be in need of more capital, in case if the policyholders are in cause of any default. Compared to the predecessor, Solvency I, this fact was however not true i.e., it assumed that the risk for the insurance firms were homogeneous.

In addition to this, we think that the Solvency II might need to make a review. It is a known fact that, the climate change is a phenomenon that cannot be avoided. How will the insurance companies be able to cope with a *possible* significant natural catastrophe? Moreover, how will the insurance companies cope with today's arise of inflation and thus the soluble hike in interest rates? Biological attacks? There are many parameters to take into account - since the world are becoming more complicated for everyday and the possible economical threats are in an aggressive arise that cannot be ignored.

Solvency II has met a lot of critique from the side of insurers regarding costs and complexity of implementing Solvency II, especially in smaller companies [12]. The high cost and complexity of implementation for smaller companies might reduce competition in the insurance sector. However, it is important to note that new proposals are regularly reviewed by the European Union, and considered in adjustment of Solvency II.

Lastly, introducing Solvency II implicitly introduced more rules. While it can be argued that the insurer industry needed a more mathematically sound management of long-term risks, more rules does not necessarily lead to a better application of the regulatory regime.

9 Reading guide

The interested reader can deepen their knowledge with regards to the Solvency II by some of the following suggested papers and articles, that processes different topics within the Solvency II framework. For instance, how has the Covid-19 pandemic affected the way of insurance firms handling the capital management? Which can be attained here [13]. Moreover, here [11], is a great paper regarding the procedure of the SFCR and RSR reporting, explained in detail - which comes as a peer review by the European Insurance and Occupational Pensions Authority (EIOPA). For direct information on the Solvency II legislation we refer to the European Comission's official website. For readers looking to view Solvency II in actuaries' perspective, article [4] gives a good overview.

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