Abstract

The Draft Law for Mexican Insurance Institutions establishes a regulation under the principles of Solvency II. In order to assess the impact of the elements of Pillar I (quantitative requirements) of this new regime, in 2009 the Mexican Association of Insurance Companies (AMIS) carried out the first Mexican quantitative impact study based on QIS4 methodologies.

This was a voluntary exercise sponsored by AMIS associates and with the participation of 28 companies representing 83.5% of market share based on 2008 premiums.

The First Mexican QIS (QIS1-M) valued the Solvency Capital Requirements (SCR) of the Life underwriting risk (mortality, survival, disability, lapse, expenses and catastrophic), Non-Life underwriting risk (premium and reserve), market risk (interest rate, equity, spread and property), counterparty and operational risk. Solvency II committee reviewed, calibrated and modified methodologies of the European QIS4 in order to ensure adequacy for the Mexican Market.

After this first study, AMIS has continued working on improving calibration and methodologies.

This paper shows the result of two of those efforts to improve results performed on the Non-Life underwriting risk module and the counterparty risk.

For underwriting premium risk, QIS1-M employs collective risk model to calculate the SCR. The model divides the severity of claims in two: Moderate and High, each type with a different loss distribution. The aggregated loss is obtained by simulating Moderate claims independently of high severity claims. The methodology improvement considers the severity type as a random variable from a Uniform probability distribution that simulates the type of severity (high or low severity). This improvement leads to a global 9% decrease in the SCR,
To assess the counterparty risk SCR, we employed a rather common banking methodology, involving probability of default, exposure and the percentage expected to recover once the counterparty is in default. The improvement integrates a sensitive risk approach through a Monte Carlo simulation of the transition matrix for default probabilities and stochastic simulation of the recovery percentage.

As a result, the industry SCR decreases 0.03%.

Key Words:

- Solvency II
- Solvency Capital Requirement
- Premium Risk
- Counterparty Risk
- Collective Risk Model
- Expected Loss Model
- Monte Carlo Simulation
- Stochastic Simulation

Short bios of the authors

**Susana Melina Castillo Guadarrama,** holds degree in Actuarial Science by UAEM (Universidad Autónoma del Estado de México). Her professional experience began in Seguros Monterrey New York Life, developing mortality, lapse and expenses studies, among others. Currently she works at Mexican Association of Insurance Companies in the Strategic Projects Area as an Actuarial Analyst.

**Miguel Angel de la Garza Camacho,** holds a degree in Actuarial Science by ITAM (Instituto Tecnológico Autónomo de México). He has been an assistant at the Mexican Embassy in Buenos Aires, Argentina and worked as a Risk Management analyst at Afore Argos. Currently he works at Mexican Association of Insurance Companies in the Strategic Projects Area as an Actuarial Analyst.