

A pragmatic approach to improve an investment strategy under Solvency II

A growing need for insurance undertakings

Due to the entry into force of the Solvency II regime as of 1 January 2016 together with the current economic environment characterized by low interest rates and high credit spread volatility, the contribution of the "Market risk" module under Solvency II has become a main concern for European insurance and reinsurance undertakings.

Indeed, in 2016, the capital charge for Market risk accounted for 86% of the Solvency Capital Requirements ("SCR") for life insurance undertakings and for 68% for non-life insurance undertakings¹.

Such a contribution to the SCR encouraged insurance undertakings to review their asset and liability management (ALM) in order to not only incorporate the new prudential framework, but also incorporate the stress tests regularly imposed by the national and European regulators as well as certain international organizations.

In this context, insurance undertakings have developed increasingly complex models, based on detailed financial data obtained by performing a look-through approach in order to determine better investment strategies that allow them to enhance the financial profitability of the business while limiting the capital requirements imposed by the regulation.

Furthermore, the poor return of a bond-based investment strategy encourages insurance undertakings to look further into innovative investment strategies in an attempt to offset the predictable low performance tendency in their financial results.

Insurance undertakings are therefore seeking for investment strategies that allow them to:

- Lower the shareholder's capital injection by reducing in particular the capital charge related to the market risk module
- Maximize the financial return on the investment's portfolio
- Effectively manage the market and liquidity risks linked to less conventional investment strategies

¹ "Les chiffres du marché français de la Banque et de l'Assurance", ACPR, 2016, according to the standard formula. Reinsurance undertakings have been excluded from the study; however, mixed-activity insurance undertakings have been included in the study.

In this context, Deloitte Luxembourg has assisted several players in the insurance industry in order to:

- Validate and challenge the models employed and the achieved results under the prudential capital requirement framework
- Assess non-traditional or « Solvency II friendly » investment strategies as qualified by their structurers
- Identify, measure and implement capital optimization levers;
- Implement the highest standards in data quality management and data transmission processes

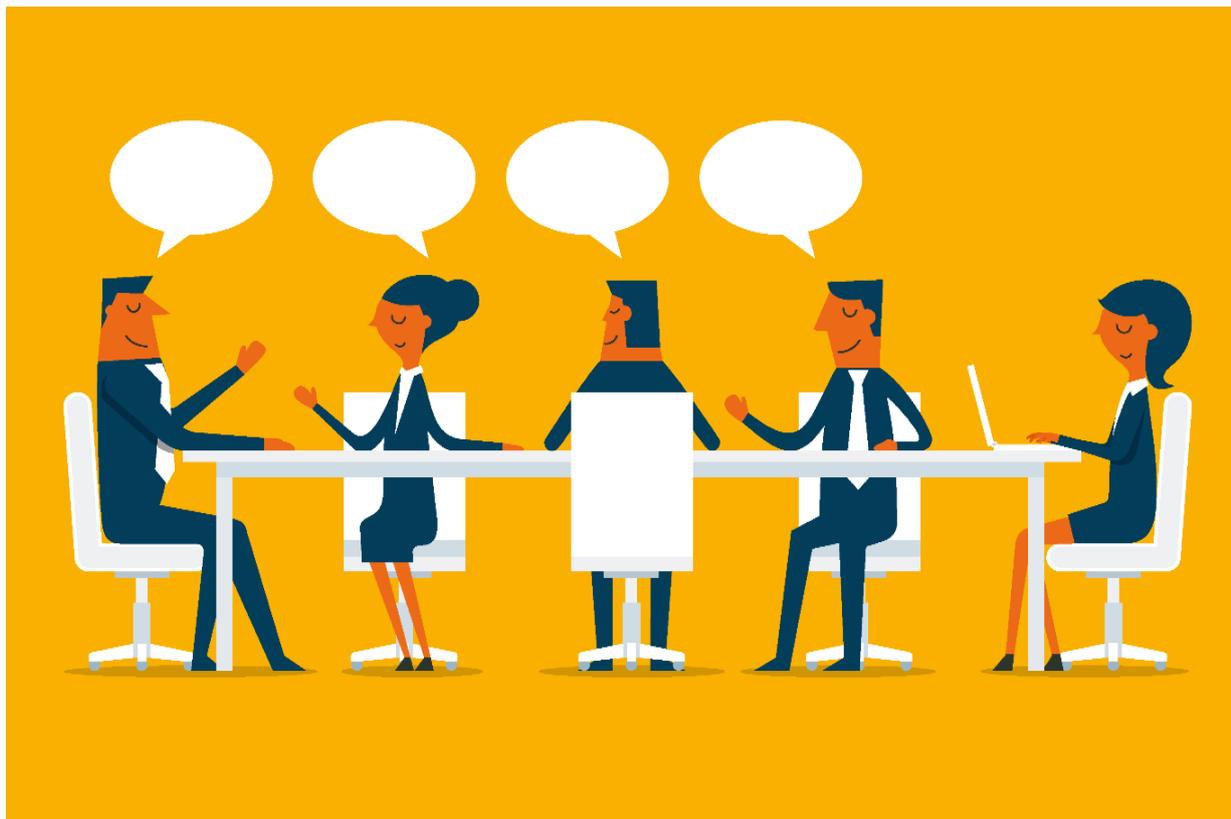
From these projects, we have witnessed that for a given insurance undertaking, in addition to its risk appetite, the regulatory and financial constraints of the new investment strategies are closely linked to:

- The underlying structure of its technical provisions
- The current investment policy of the undertaking
- The enforced tax framework that they are subject to
- The expected performance on different asset classes of the investment portfolio

In order to take into account these variables, we have developed an easily implementable and pragmatic methodology that allows undertakings to identify better investment strategies with respect to the ones currently in place.

Our approach considers the profitability of the investment strategy, the economic risks associated to it, as well as other undertaking-specific parameters.

For simplification purposes, the analysis presented in this document focuses on four innovative investment strategies, as well as their impact on the solvency and profitability of the life and non-life insurance undertakings while incorporating the main characteristics of their portfolio of liabilities.



Methodology

In order to properly assess the regulatory impact, and in particular the valuation of the solvency capital requirements and the availability of the own funds of the undertaking, our analysis incorporates an economical view of the balance sheet of an insurance undertaking.

In this sense, and in order to generalize our results, we have considered the following balance sheet structure:

- On the assets' side of the balance sheet, we have assumed that 84.3% of the investments corresponds to government and corporate bonds and 5.6% corresponds to equity
- On the liabilities' side of the balance sheet, and in order to consider the significant differences between the technical provisions of a life and a non-life insurance undertaking, we used different portfolios mainly characterized by their durations

Standard balance sheet of an insurance undertaking (economical view)

(References: ACPR, EIOPA and internal data) – after the look-through approach on collective investment funds.

Assets	Proportion	Liabilities	Duration
Property (other than for own use)	1,7%	Non-life	
Participations in related undertakings	5,9%		
Equities	5,6%		
<i>Listed</i>	4,7%		
<i>Unlisted</i>	0,9%		
Bonds	84,3%		
<i>Government bonds</i>	39,0%		
<i>Corporate bonds (without high yield corporate bonds)</i>	41,2%		
<i>High yield corporate bonds</i>	0,8%		
<i>Structured notes</i>	3,0%		
<i>Collateralized securities</i>	0,3%		
Derivatives	0,3%	Life	
Deposits other than cash equivalents	0,7%		
Other investments	1,7%		
Total	100%		
		Other motor	0,5
		Fire	1
		Income protection	3,5
		Motor vehicle liability	3,5
		Third party liability	5
		Traditional	6
		Savings	8
		Pension / Annuities	12

After defining the "standard" balance sheet of an insurance undertaking, we have defined our investment strategies by defining two substitution strategies:

- The proportional substitution strategy corresponds to adding a new asset corresponding to 5% of the portfolio and distributing the 95% of the portfolio keeping the original distribution of the remaining assets
- The targeted substitution strategy corresponds to the partial replacement of a specific asset class by a new asset class (usually the substitution was around 5% of the portfolio on that specific asset)

Performance and risk indicators

In order to compare the impact related to the four selected innovative investment strategies, we have analyzed three indicators normally monitored by the management committee of insurance undertakings:

- **The change in the profitability:** the increase or decrease of the expected financial return resulting from the applied substitution strategy
- The change in **the adjusted cost of capital** related to the regulatory own funds: the increase or decrease of the cost of capital resulting from the applied substitution strategy, considering the coverage level requested by the shareholders
- **The risk indicator** (volatility): the increase or decrease of the volatility of the investments' portfolio resulting from the applied substitution strategy

The adjusted cost of capital indicator is calculated as the product of:

- The expected return on capital established at 10%, in line with the current shareholders' expectations as seen in the insurance market.
- The targeted solvency ratio set at 140%, this is the level usually observed in the insurance market. It represents the solvency level of an insurance undertaking, which should be in line with its risk appetite
- The Basic Solvency Capital Requirement (BSCR) valued according to the standard formula established in the Solvency II directive. By considering the BSCR rather than the SCR it neutralizes the impact of the operational risk (which is considered as not significant) and the impact of the adjustments related to deferred taxes and profit sharing (which are highly dependent on the specificities of each insurance undertaking)

Moreover, the BSCR reflects the diversification effect between market risk and the other risk modules.

In theory, the volatility of the investments portfolio is strongly correlated to the BSCR due to the calibration of the standard formula and the different shocks associated to it. Following this rationale, we have only considered the first two indicators presented above to measure the results.

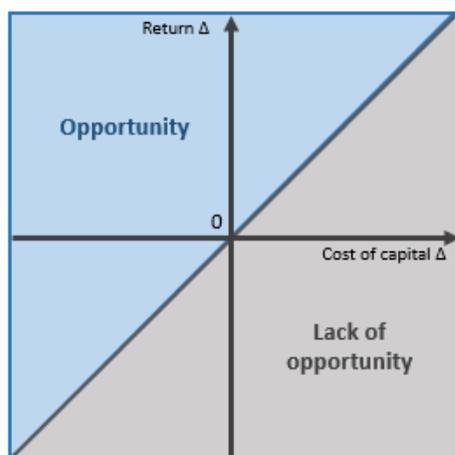
Structure of the four innovative investment strategies currently considered in the market

The innovative asset classes described here below have been selected out of many others in order to substitute the current assets held in the balance sheet of an insurance undertaking by implementing the abovementioned substitution strategies:

Investment asset	Advantages over standard assets	Main factors that impact the SCR
Convertible bonds	<ul style="list-style-type: none"> The convexity of the convertible bonds 	<ul style="list-style-type: none"> The place of quotation The sensitivities (delta/gamma) of convertible bonds The credit rating of the convertible bonds
Danish mortgage bonds	<ul style="list-style-type: none"> The liquidity Good credit rating Insignificant default risk Higher return 	<ul style="list-style-type: none"> Callable options Adjustable duration of the Danish mortgage bonds due to its optional feature.
Emerging market investment grade corporate bonds	<ul style="list-style-type: none"> Access to the performance of the emerging markets and to diversification Good credit rating Higher return 	<ul style="list-style-type: none"> The credit rating The duration The hedging of the foreign-exchange risk
High yield corporate bonds	<ul style="list-style-type: none"> Less sensitive to interest rate compared to standard bonds High return/volatility indicator 	<ul style="list-style-type: none"> The credit rating The duration The hedging of the foreign-exchange risk

Through the outsourcing of the management of the investment portfolio, the asset manager will introduce a diversification benefit.

Interpretation of the results



The switch between two investment strategies is appropriate when the variation of the expected financial return is strictly greater than the variation of the cost of capital. It means that the strategy has a positive impact on the expected net financial result subject to the impact on the adjusted cost of the capital constraints generated by the market risk module. The variation on the cost of capital reflects as well the change in the diversification effect between the sub-modules of the standard formula.

It is worth noting that the results are strongly linked to the forecasts made by the investors regarding the expected financial returns. On a different note, beyond the quantitative aspects, some qualitative aspects of the investment strategies such as the liquidity of the assets should not be overlooked.

Investment asset	Substitution strategy	Δ Profitability	Δ Cost of capital	Existence of a trade-off opportunity?
Convertible bonds	Proportional			
	Corporate bonds			
	Equities			
Danish mortgage bonds	Proportional			
	Corporate bonds			
	Government bonds			
Emerging market investment grade corporate bonds	Proportional			
	Corporate bonds			
High yield bonds	Proportional			
	Equities			
	Corporate bonds			



Favorable increase



Favorable decrease



Unfavorable increase



Unfavorable decrease

For illustration purposes:

- A proportional substitution based on the high yield bonds lead to an increase in the return and an increase in the cost of capital; since the return increase is lower than the cost of capital increase, this investment strategy does not represent a trade-off opportunity
- A substitution of corporate bonds for convertible bonds induces an increase in the return as well as an increase in the cost of capital; since the return increase is higher than the cost of capital increase, this investment strategy represents a trade-off opportunity

Conclusion

The analysis performed highlights the existence of yield increase opportunities while limiting the capital constraints imposed by the current regulation. These opportunities appear with proportional substitution strategies as well as with targeted substitution strategies. For example, the study shows how the substitution of standard corporate bonds for other innovative assets such as Danish mortgage bonds may lead to convincing results. Indeed, since the expected financial return for traditional corporate bonds is relatively small, certain advantages emerge when applying innovative investment strategies allowing the cost of capital to decrease while improving the expected financial return.

However, some other substitution strategies lead to opposite results—lack of trade-off opportunities. For example, in this study, the substitution of equity for convertible bonds or for other high yield bonds does not lead to the desired results. Indeed, since the expected financial return on equity is relatively high, none of the analyzed substitution strategies are able to lower the risk profile of the undertaking in terms of cost of capital up to the extent that allows offsetting the expected financial loss of the undertaking that results from the substitution strategies.

It is important to stress that the results presented in this document are only valid under a determined economic context. Moreover, it is necessary to perform a detailed case-by-case assessment given that the analysis is highly dependent on the assumptions made and the underlying data used. In order to enhance the analysis, the investment costs, the taxes and the risk appetite of each undertaking should be considered.

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