

Lapse risk in Solvency II and rising interest rates: Recent developments, main critical issues and possible solutions

(ANIA, National Association of Insurance Companies)

Introduction: The capital requirement for lapse mass risk in the standard formula

The Solvency II framework requires the lapse risk module to **measure the sensitivity of the value of insurance liabilities to changes** in the level or **volatility of lapse rates**, and the capital requirement is calibrated as the **difference between the value of assets net of liabilities (Net Asset Value, NAV)** estimated considering the **"central" scenario and the NAV assessed in the "stressed" scenario**. The latter is characterized by extreme assumptions on the rates of early termination option exercise, terminations, renewals and surrenders.

Articles 118, 142, 150 and 159 of Delegated Regulation (EU) 2015/35 (so-called Delegated Acts) define the methodology for calculating this requirement for non-life, life and health insurance NSLT (*not similar to life technique*) and SLT (*similar to life technique*), respectively.

In particular, the capital requirement for lapse risk **for life insurance**¹ (the most relevant from a quantitative point of view) is equal to the highest of the capital requirements calculated under the following three shock scenarios:

- a **permanent instantaneous 50 percent increase in lapse rates** (so-called lapse up) with a cap that prevents the increased rate from exceeding 100% [$R_{up}(R) = \min(150\% \cdot R; 100\%)$];
- an **instantaneous permanent 50 percent decrease in lapse rates** (so-called lapse down) that does not exceed 20 percentage points [$R_{down}(R) = \max(50\% \cdot R; R - 20\%)$];
- the **instantaneous termination of a predefined share of policies** outstanding at the time of calculation (so-called lapse mass). In detail, the scenario assumes the instantaneous termination of 70 percent of policies that fall under collective pension funds and 40 percent of individual policies, and a 40 percent drop in the number of reinsurance contracts covering future insurance contracts (used in the calculation of technical provisions).

In each of the cases shown, moreover, **assumptions are applied only to the relevant options** (extinguishment or termination), **the exercise of which would result in an increase in technical provisions without the risk margin**; finally, **the valuation of technical provisions must take into account assumptions about future management measures** (Art. 23 Delegated Acts) and **Dynamic Policyholder Behavior** (Art. 26 Delegated Acts).

¹ For SLT health insurance, the calculation methodology is similar to that for life insurance (excluding assumptions on group policies), while for NSLT property and casualty insurance, the calculation involves the construction of a single "mass termination" scenario similar to the lapse mass scenario (net of assumptions on group policies).

The impact of the current financial market environment on Italian companies: key highlights

Recent developments in financial markets, due to the evolving global political and health situation, are severely affecting Italian insurance companies and are **putting pressure on solvency indicators**. **This section of the paper therefore aims to analyze the main impacts** of recent developments in the financial markets on the insurance industry.

From the end of 2021 **the value of the Companies' financial assets has decreased markedly**.

The depreciation of financial assets during 2022 is **mainly attributable to three factors**:

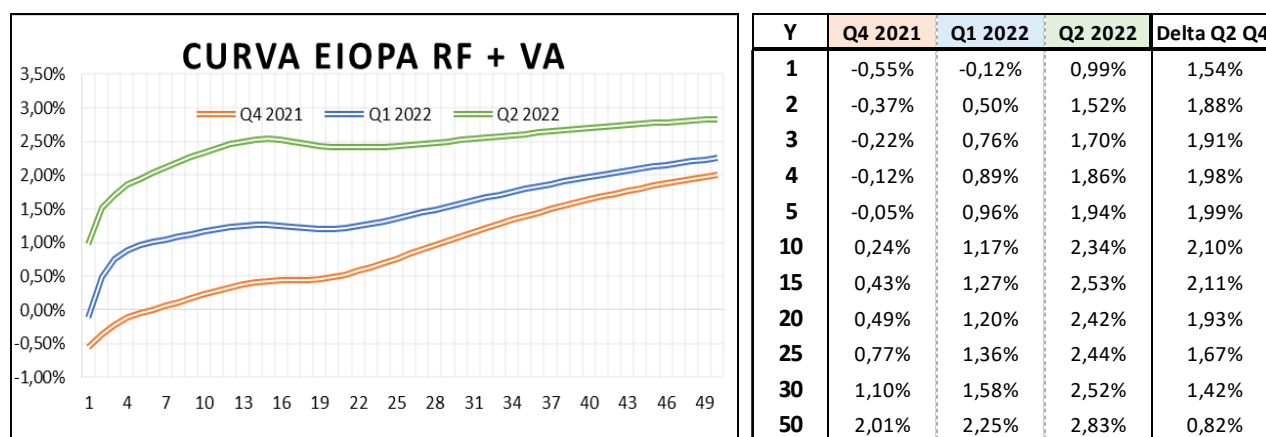
- **rising interest rates**
- **increase in credit spreads**
- **decline in the stock market**

While the first two factors have an impact on the bond component, a prevalent asset class in the portfolios of Italian Companies that have “Segregated Funds” as their main business (the so-called “Gestioni Separate”), the decline in the stock market contributes to decrease the value of the assets available to the Company for sale in case of mass redemption.

It is therefore intuitive to imagine how **in an environment such as the current one**, which combines at the same time high interest rates, rising spreads on both Italian government bonds and corporate bonds, and the falling stock market, **the Companies have severely distressed asset portfolios at their disposal**.

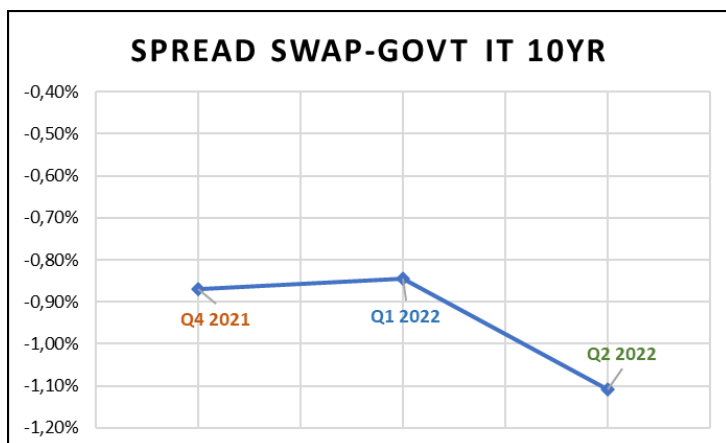
The impact of rising interest rates:

Rising interest rates make the bonds held by the Company in its portfolio less attractive in the market, consequently reducing their value. The graph and table below show the significant rise in interest rates between Q4 21 and Q2 22; given the European Central Bank's latest decisions and declarations of intent, this growth is not likely to stop in the short term.



The impact of rising credit spreads:

In addition to rising rates, the second factor affecting the value of the Companies' portfolios is the rise in credit spreads, which contributes to the depreciation of bonds. Below are the levels of the spread between swap rate and yield on 10-year Italian government bonds from which the sharp increase in the government-swap spread between Q1 22 and Q2 22 is shown.



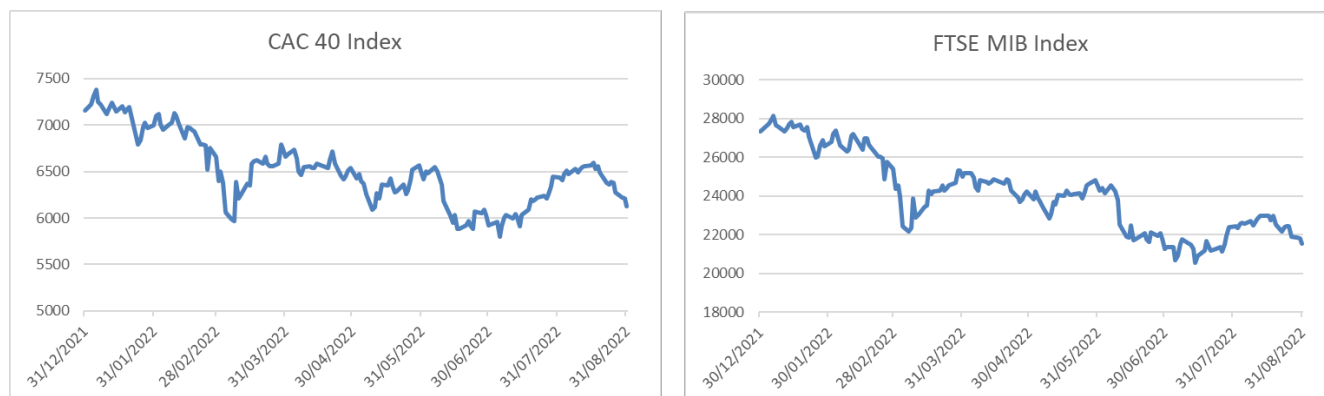
T	Q4 2021	Q1 2022	Q2 2022
10yr swap spread Govt Italy	-0,87%	-0,85%	-1,11%

The evolution of corporate spreads broken down by sector and rating is shown below.

Corporate Spread	Q4 2021	Q1 2022	Q2 2022
5-year AA Swap Spread Financial EUR	0,15%	0,20%	0,61%
5-year A Swap Spread Financial EUR	0,31%	0,41%	1,03%
5-year BBB Swap Spread Financial EUR	0,64%	0,88%	1,95%
5-year A Swap Spread Non Financial EUR	0,14%	0,18%	0,61%
5-year BBB Swap Spread Non Financial EUR	0,30%	0,46%	1,12%
5-year BB Swap Spread Non Financial EUR	1,63%	2,19%	4,12%

The impact of stock declines

The decline of the stock market is another factor that generates portfolio losses on the equity component. Below is the evolution of the CAC 40 and the FTSE MIB over the past year.



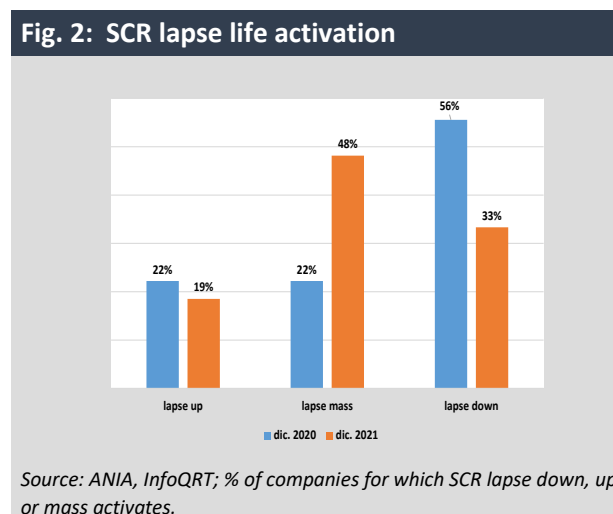
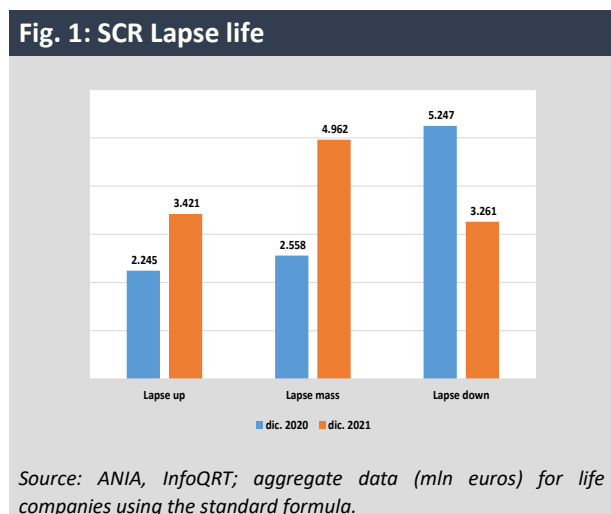
The changed economic scenario described above has inevitably changed the risk profile of insurance companies resulting in a worsening of the Solvency ratio, i.e., the ratio of Own Funds to Solvency Capital Requirement.

Recent development of lapse risk module in Italy: main critical issues

Data extrapolated from the annual QRTs² showed that already in 2021, despite a substantial stability in the overall weight of lapse risk on total technical provisions (just over 1 percent), Italian life companies saw the capital requirement associated with lapse mass risk increase compared to YE 2020, which almost doubled in terms of aggregate SCR (Fig. 1). This risk became the predominant risk among the three scenarios (fig 2), and thus the "trigger" for quantifying the SCR lapse, for about 50 percent of companies (it was just over 20

² InfoQRT, ANIA

percent in YE 2020). In contrast, *lapse up* increased by 52 percent from December 2020 in terms of aggregate SCR, while *lapse down* decreased by 40 percent.



This trend would appear to have continued in 2022 and has been **accentuated by the further rise in interest rates**, as reported by many companies, **with major impacts on the capital requirement resulting in a worsening solvency ratio.**

From the analyses conducted it emerged that **this dynamic would have as its main driver the particular macroeconomic and financial context we are going through** - characterized by strong rate rises with a reversal of the recent prolonged period of negative or very low rates, increase in credit spreads, generalized declines in stock markets, pandemic crisis, geopolitical tensions and its indirect consequences on policyholders' economic conditions, etc. - **associated with the specificities of the insurance business of Italian life companies.**

Lapse mass risk, which in a low-rate scenario historically **represented the loss of value (VIF) of the portfolio in the event of a massive decrease in profitable policies** (e.g., pure risk, Unit Linked), **in the current environment also significantly affects traditional business portfolios** without significant PVFP (such as, for example, Gestioni Separate).

The **current scenario has inevitably led both to direct impacts on the value of assets in the portfolio and to an increase in the dynamic effect of lapses present in the mathematical formulas expressing the best estimate reserve**, where the increase is attributable to the presence of more favorable market conditions than the rates recognized by most of the products marketed by traditional Italian life companies whose prospective revaluations and minimum guarantees (guaranteed close to 0%, with average gross annual revaluation equal to about 2.5% in recent years) are lower in many of the stochastic scenarios.

Indeed, for many Companies, the **risk-free interest rate curve** turns out to be a **key variable in determining the prevailing risk in the SCR lapse submodule**. A sudden drop or rise in it has different impacts, direct or indirect, depending on factors such as, for example: i) the specific **structure of guaranteed minimums** characterizing their policy portfolio; ii) the **implicit profits** of the portfolio; iii) the presence and type in the policy contractual conditions of **penalties or time limitations** in the case of the exercise of the lapse option; and iv) the use of specific **DPHB (Dynamic Policyholder Behaviour) models**.

Under current market conditions, moreover, a massive redemption event would result in a liquidity requirement that can no longer be met without a substantial realization of the capital losses in the portfolio, with material impacts on both policyholder returns and the Income Statement.

Main considerations and potential areas of intervention: the use of reinsurance as lapse mass risk mitigation technique

The above considerations brought to light important critical elements of the current standard formula calculation methodologies, which would have triggered distorting effects of these market dynamics on the quantification of the lapse mass module.

The main considerations in this regard are outlined below.

- i. **Shock parameter** (40 percent for individual policies) **extremely penalizing compared to what is applied for example in insurance stress tests or by reinsurers.**

This shock is calibrated through expert judgment and is extremely implausible compared to that proposed by EIOPA in the Insurance Stress Tests, which is 20 percent. EIOPA itself, in the "Solvency II Calibration Paper³" of 2010, argued that the lapse mass scenario should cover events of a "catastrophic" nature (reputational damage, downgrades, insolvency, rumors about the company's financial stability, etc.) and not causes related to changes in financial scenarios. Similarly, most reinsurance contracts provide an attachment point of 20 percent to cover this risk.

- ii. **Unrealistic policyholder behaviour assumptions.**

Under the 40% mass lapse assumption, it is considered unrealistic for the Company to continue to apply a "standard" strategy, perhaps guided by contingency plans; it is difficult, therefore, to consider it likely that the assumptions underlying the model will remain the same following the occurrence of the massive policy termination.

- iii. **Companies using standard formula unable to account for time series of their own lapse rates** in the methodology for calculating the SCR.

This assumption does not consider that the policyholder's choices could also be influenced by factors related to the company's past behaviour.

- iv. **Exclusion of the impacts of lapses on risk margin.**

Scenarios assume that the cost of holding capital for future lapse mass risk remains unchanged despite the loss of policyholders (and future profits). This assumption is **particularly penalizing for unit-linked products and, in general, for whole-life insurance** (i.e. products with longer durations).

- v. **Application of shocks to "in-the-money" policies only**, i.e., in cases where the policyholder has made his own rational assessment and found a "convenience" in exercising the option at the value reached by the contract with respect to the investment made.

This hypothesis **does not consider the irrationality** that might characterize the behavior of policyholders **in exceptional situations** such as those drawn in the risk calibration: reputational damage, real or presumed deterioration of the Company's financial situation, etc., or even just the redemption component linked to the client's pressing need for liquidity in times of economic crisis.

³ [CEIOPS-Calibration-paper-Solvency-II](#), par. 3.324-3.326.

After noting the critical issues implicit in the calibration of the capital requirement for the lapse mass risk provided by the current standard formula **the Association believes that a recalibration of the lapse mass parameter is the most effective way to avoid creating distortions in both the business and modeling choices of companies.**

However, **among potential solutions to help mitigate in the short to medium term the effects described in the paper, the tool of reinsurance has been identified as the most effective.**

The use of reinsurance (in line with structures already adopted by other companies in other EU states) would, in fact, **aim to protect the Company from the potential loss of Own Funds in the event of a massive lapse event by transferring part of the risk to the reinsurer.**

EIOPA itself, in its [Opinion on the use of risk mitigation techniques by insurance and reinsurance undertakings](#) of July 12, 2021⁴, would seem to recommend an evaluation of such solutions through discussion with the Supervisory Authority.

It is believed that the **main features of a possible reinsurance treaty capable of mitigating such a type of risk**, in light of the above considerations, are:

- a) an appropriate definition of **thresholds relating to minimum and maximum lapse frequencies within which the reinsurer is called upon to intervene**, setting an *attachment point*⁵ and a maximum point (so-called *detachment point*⁶), in order to make the contract sustainable by both parties;
- b) a definition of the **time horizon of the coverage** consistent with the provisions of Solvency II;
- c) a definition of the **reinsurer's payback**;
- d) a demonstration of the **effective risk transfer**;
- e) **a periodic monitoring and evaluation** of the coverage according to key factors such as the risk-free rate curve;
- f) a definition of the **internal evaluation process**⁷;
- g) the **treaty duration**;
- h) **maximum amount** of the coverage.

Having said that, it is important to point out how important it is for this treaty to have a structure that can **ensure consistency with the basic assumptions, constraints, and principles under the Solvency II framework.**

⁴ "All risk transfer transactions need to comply with Articles 208-214 of the Delegated Regulation, however, following a risk-based supervision, it is expected that the most complex ones and those that present specific interactions with the Standard Formula (e.g. multi-year stop-loss covers, bifurcated covers, complex deep sliding-scale or profit commissions, longevity or mass-lapse risk transfer among others) need more attention from supervisory authorities. In these cases, supervisory authorities should engage in an on-going supervisory dialogue with the undertaking, as it is already a common practice in several jurisdictions. For this dialogue to be efficient, it should start sufficiently before the conclusion of the reinsurance agreement to allow supervisory authorities to understand the undertakings' Reinsurance Strategy and its impact on the solvency position of the undertaking. This dialogue is expected to be maintained over time so supervisory authorities are informed in case of any material changes."

⁵ In the case of a reinsurance treaty to cover the lapse risk, it is the level of the lapse rate, agreed in pre-contract between the parties according to the chosen reinsurance structure, above which the losses associated with the covered event are borne by the reinsurer.

⁶ In the case of a reinsurance treaty to cover the lapse risk, it is the maximum level of the lapse rate, agreed in the pre-contractual stage between the parties according to the chosen reinsurance structure, above which the losses associated with the covered event are borne by the Company.

⁷ In compliance with IVASS' Letter to the Market dated July 28, 2021, on the proper use of risk mitigation techniques.