



# ORSA forecast in Life Insurance

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## ORSA as Pillar II in Solvency II

ORSA is *pillar II* in Solvency II in contrast to pillar I that is the point in time balance sheet and SCR.

Its main duty relates to the prevision (forecast) of *future balance sheets* over the following 3 or, more often, 5 years.

Balance sheets are in accordance with Solvency II, anyway, it's necessary to project Local GAAP, at least in order to gauge *deferred tax assets and liabilities*.

Moreover, ORSA should be consistent with the "*strategic plan*" whose main measures are consistent with IFRS17 & IFRS9 and IFRS15 (and others IASB / IFRS principles).

- Solvency II entails both the following:
  1. Own Funds → assets and liabilities → financial assets, deferred tax and technical provisions → impairment test, best estimates (BEL), risk margin → deterministic BEL, Dynamic BEL, Stochastic BEL, underwriting risks, operational risk, counterparty risk
  2. SCR → Gross SCR, LAC TP, LAC DT → proof of recoverability

# ORSA as Pillar II in Solvency II. Base scenario

ORSA is *pillar II* in Solvency II in contrast to pillar I that is the point in time balance sheet and SCR.

## Base scenario

- The base scenario is the forecast solvency II balance sheet and SCR over the projection period (let me say of 5 years).
- The word “base” entails that the economic environment does not change as of the point in time provisions and, in particular, it’s not subdued to stress conditions; moreover, the underwriting context is not subject to stress conditions.
- The base scenario has at least the granularity of year.
- The run involves the business in force (InForce) as at the starting point of projection (conventionally set to time  $t=0$ ).

It’s strongly advised the consistency of the InForce in  $t=0$  with pillar 1 balance sheet.

Nonetheless, it may allow for future premiums and/or future options which have not been included in pillar I in case they were deemed to meet contract boundaries

- The run involves also the future new business (and future premiums tied by contract boundaries in case they have not been added within the InForce).
- The future events in the perimeter of Pillar II are potentially more numerous than in pillar I: for examples, (1) voluntary switches inside hybrid contracts from(to) the participating component to(from) the unit linked component provides useful information in pillar II although not important for assessing technical provisions and SCR in the reporting of pillar I; (2) transformation & substitution as well as transfer of liabilities from / to other insurance entities (pension funds) provide useful information in pillar II.

# ORSA as Pillar II in Solvency II. Base scenario

## Base scenario

The base scenario replicates yearly the economic environment of pillar I that is risk neutral.

Risk neutrality entails the usage of:

- Risk free interest rates both until the last liquid point (LLP, 20 years for €), the same ultimate forward rate (UFR, at year 60 for €) and the same extrapolation method as used in pillar I for settings from LLP to UFR.
- Volatility adjustment (or matching adjustment) to reflect part of spread of government and corporate bond is not related to probability of default of issuer, rather to the illiquidity of their financial assets
- Eventual other long - term transitional measures being used in pillar I such as the transitional on technical provisions
- Probability of default consistent with their spread and rating, also for the reinsurance counterparties.

## Underwriting

The events of mortality, longevity, disability, lapse, expenses as well as CAT Life events (pandemic outbreaks) do not occur in base scenario.

The set of mortality, longevity, disability and CAT are “biometric”

Lapse is an external non – biometric underwriting event and includes surrender claims, the exercise of lump sum in case it’s ruled as option, paid up or any downward change of premium payment, the interruption of deferral of maturity date.

Mass lapse is sudden event in the category of lapses

Expense is an internal non – biometric underwriting event and allows for inflation.

# ORSA as Pillar II in Solvency II. Base scenario

## Base scenario

### Investment & economics

The economics are figured out as a list of market conditions:

Interest rates

Spread and default

Equity returns and dividend yields

Property income

Return on cash and deposits

“default” is defined in Solvency II standard formula with 3 different risks:

Spread of corporate, covered and – if any – government bonds

[risk of] Concentration

Counterparty [risk] of entities and credit institutions which store derivatives or cash, sale network and insurance companies in relation to, respectively, debtors for premiums and coinsurance, reinsurance entities.

All these kinds of default events, belonging to SCR, should be managed consistently when the balance sheet is subdued to stress; moreover, all the government bonds should be subject to stress and the existence of mechanism of volatility adjustment, matching adjustment might be annulled.

# ORSA as Pillar II in Solvency II. Stress Scenario. One stress, no recovery

## Stress Scenario

The stress scenario is a combination of economic and underwriting conditions which could reveal worsen than expected in the base scenario.

## One stress, no recovery

The stress might be carried out at the starting date of projection, just one time, after that we look at the evolution of the post shock own funds and the post shock SCR over the next 5 years, without assuming any recovery that is no return to base conditions

If so, the own funds and the SCR are determined at each of the following years ( $t=1,2,3,4,5$ ) based on post shock economic and underwriting environment which by construction, cannot coincide with the base scenario any longer.

In such conditions, the worst case is the time when the initial shock becomes harder, not necessarily at  $t=0$ .

It's a test to check how much the entity resists in the long term after the heavy initial stress not recovered at all in the long term and, anyway, not furtherly worsening. The worst case maybe incurred not necessary in  $t=0$ , rather at ant time  $t \leq 5$

The stress scenario (briefly SST thereafter) measures the Solvency Ratio after stress.

It could become lower than the risk appetite or even lower than 100%. In extreme cases, SST might breach the MCR

The forecast may allow for management actions reacting against the initial shock which can help in the long term so that it's unlikely to see  $t=4$  or 5 as the worst years.

# ORSA as Pillar II in Solvency II. Stress Scenario. Multiple stress and recovery

## Stress Scenario

The stress scenario is a combination of economic and underwriting conditions which could reveal worsen than expected in the base scenario.

It's a test to check how much the entity resists for ideally 1 month should the stress incur after t years of real world non – stressed environment. The worst scenario could happen at any time with the same likelihood.

The stress scenario (briefly SST thereafter) measures the Solvency Ratio after stress.

It could become lower than the risk appetite or even lower than 100%. In extreme cases, SST might breach the MCR

## Multiple stress immediately after followed to a sudden return to real world non – stressed conditions

The stress might be carried out at each year from the starting date of projection (included), anytime after a period where the economic conditions are real - world and the underwriting situation is not stressed. At any time, we look at the Solvency Ratio post shock and pay attention to the worst case, namely when the Solvency Ratio drops down to its minimum.

Any shock of the own fund is followed by a post – stress SCR, namely the SCR itself works under stress environment, where both assets and liabilities (the portfolio in force after shock) are changed

The return to the real world annuls every effect of shock, including mass lapse and CAT event, as if the previous shock had never occurred.

The return to real - world is achieved through the “roll forward”

# ORSA as Pillar II in Solvency II. Stress Scenario. Diversification and simultaneity

## Stress diversified Scenario via simultaneous shock

Regardless to method (either one shock without recovery or multiple shocks followed by recoveries) the stress scenario combines different single risk factors through diversification and simultaneity.

The shock is said “simultaneous” if the runs of assets and liabilities are performed after having changed all together the parameters.

Simultaneity does not mean diversification & correlation.

The shock might be carried out through 2 steps of simultaneity:

- The first step relates to all the market & economic factors changing together
- The second step refer to all the underwriting factors changing together, reflecting the conditions after the previous economic shock

Diversification means that, for a given probability and measure (for example VAR at 95%), whose single shock (risk) factors are, let me say,  $X_1, X_2, X_3, \dots, X_n$ , the vector of diversified factors is  $Y_1 < X_1, Y_2 < X_2, Y_3 < X_3, \dots, Y_n < X_n$  for the same percentile 95%.

Setting risk factors and setting their diversification needs and entails an initial stage of statistical analysis



# ORSA as Pillar II in Solvency II. Reverse stress

## Reverse stress test

If we look at the 2 or 3 most important risk exposures, we could argue what is the Percentile which provokes a decline of Solvency ratio to 100%.

The reverse starts from the base scenario, i.e. not from an initial post stress scenario of ORSA.

It could be done at each  $t$  ranging between zero and five. If performed at time  $t \geq 1$ , the base position is either risk neutral or real world depending on the method chosen for the overall ORSA projection.

It's said "reverse" because the variable to find is the probability of the joint event which causes solvency ratio dropping to 100%. The test must be done in respect to [impact on] own funds and, if feasible, also in respect to the reassessment of SCR post stress.

For example, if we individuate lapse up, spread and equity risk as the main 3 risk factors, the reverse stress outcome might be VAR at 99.8% which means that the set of diversified (only internal diversification limited those 3 risks) factors

Lapse up + 75%, credit spread + 150 bp, equity fall -45%

Are sufficient to make solvency ratio 100%.

# ORSA as Pillar II in Solvency II. Real world roll forward

## Real world roll forward

The probability of default is deactivated – fully or partially - in case the positioning from the opening to the closing balances is done based on real world economics.

This exercise is known as “roll forward”: cash flows and, above all, investment income and related bonus rates allocated to policyholders might be projected from  $t$  to  $t+1$  based on a different economic and underwriting environments.

Once roll forwarded those items for 1 year, the postings of Solvency II balance sheet are determined in  $t+1$  to match the “real world” financial statements. At the end of this step, the own funds and the SCR are again assessed according to a risk neutral environment in  $t+1$ . The procedure shall be repeated 5 times.

## ORSA as Pillar II in Solvency II. Real world roll forward

### Real world roll forward

The real world entails the replacement of risk neutral investment income with the forecast yield gross of event of default.

For example, the corporate bond with a book value of 100 is posted in t with 105 as observed market value.

The consideration expected at maturity (3 years later) is consistent with an internal rate of return by 3.7%.

The present value achieved by discounting future inflows at 2.5% of risk - free rates (without volatility and matching adjustment) till to maturity is 108. Thus, the implicit spread is worth 1.% circa that means 1% of probability to default for each of the following 3 years. Pillar II projects a risk neutral investment income by 2.7% between t and t+1 (track of amortized cost less bonds subject to default). Since the gross management fee retained by the Entity is 1.2% and the minimum guarantee is 2.0% - shaped as technical rate - the expected risk neutral bonus rate to be allocated to policyholders in (t, t+1] is nil and the net investment income for the entity is limited to 0.7%.

The real world rolling forward makes its market value set to  $105 \times 1.025 / (1-0.01) = 108.7$  circa one year later in t+1. The real world realized investment income in (t,t+1] is worth 3.7% instead of 2.7% thereof 2.5% allocated to policyholders, in part as technical rate (2%) and in part as bonus rate (0.2%). Therefore, the net investment income for the entity is 1.2%.

The opening balance in t had used 0.15% of volatility adjustment which is released from the liability side in t+1.

The roll forward provides, compared to the expected risk neutral expectation,  $(+1\% - 0.5\% - 0.15\%) = +0.35\%$  which is the “real world surplus”, where  $1\% = 3.7\% - 2.7\%$ , (delta gross investment income) where  $-0.5\% = 2.0\% - 2.5\%$  (delta insurance finance expense) and where  $-0.15\%$  is the release of volatility adjustment.

The assets in t+1 are 1% greater than previously expected and liabilities are 0.5% greater than previous expectation..

## ORSA as Pillar II in Solvency II. Real world experience variance

### Real world roll forward

The real world entails the replacement of risk neutral investment income with the forecast yield gross of event of default.

In IFRS17, assuming  $LP = VA$ , the experience variance is worth  $+ 0.35\% \times 100 = 0.35$

It is not recognized to P&L, rather to “entity share of change in fair value of the underlying items”, that is:

- in P&L, a loss by -0.35 via an increase of “insurance finance expense” through profits & losses
- in the own funds, an increase of CSM by +0.35, which is deferred in future periods according to the release of coverage units (roughly 66%) and released as profit of current period (33%)

In case the entity applies the bow wave, part of change of CSM is either immediately released to P&L (hence the entity share adjustment is lower than 0.35) or indirectly released to P&L through an upper adjustment of coverage units (hence  $> 33\%$ ).

# ORSA is Pillar II in Solvency II



## Question 1: what are the main differences as of pillar I?

Compared to pillar 1, ORSA projections:

- a) Work also in a stress environment, i.e. assuming shocks on underwriting or / and CAT event or/and market adverse events
- b) Could work also in a non – risk neutral market consistent environment
- c) The shocks of different kinds may be combined (simultaneously) instead of (pillar I) taken one by one; however, they have in common that relevant risks are mitigated through diversification (i.e. correlation < 1.0).
- d) It's necessary to perform the reverse stress [test]
- e) Future new businesses shall be considered explicitly as they will be in the perimeter of the projected technical provisions and SCR over 5 years time.
- f) Future premiums (other than stemming from new business) and future options which are deemed to be outside contract boundaries in pillar I become inside contract boundaries in pillar II in each of the following years
- g) Pillar I future management actions become actual management actions in pillar II in each of the following years.
- h) Collective contracts as well as reinsurance deals which end within 5 years need the decisions (working assumptions) on whether they will be renewed

## Question 2: which are the balance sheets in scope of ORSA projections?

### a) Solvency II under different environments

- EU regulation
- IVASS regulation 18 and 26 (technical provisions), 34 (non – financial assets and deferred tax assets and liabilities), 35 (Loss Absorbency Capacity of Technical Provisions)

### b) IFRS17 & IFRS9 & IFRS15. For reference: Regulation ISVAP 7 and, of course, the relevant international accounting standards

Why: need to check the consistency of ORSA projections against the IFRS strategic plan projections

### c) Local GAAP. For reference. Regulation ISVAP 22 as well as ISVAP 38 (accounting rules of segregated funds underlying participating contracts). Also: Regulation ISVAP 21 (rules for assessing pricing of future new business)

Why: for any item affected by the profits and losses being accounted for in Local GAAP, for examples, current and deferred tax assets as well as LAC DT.

Moreover, since local GAAP Net Premium Reserves should be consistent with the surrender values projected in ORSA

## Question 3: what is the point in time balance sheet in ORSA report?

ORSA must foresee each point in time balance sheet over its 5 years time horizon

The best way for fulfilling this task is to run the actuarial assets and liability model for five years, with five different runs.

1<sup>st</sup> run refers to the 1<sup>st</sup> year of projection:

1<sup>st</sup> run: portfolio of assets and liabilities in force at time 0 – the evaluation date by definition – with calculation date at time 1, adjusted by

The outcome of run of new business foreseen to be incepted from time 0 to time 1 (less 1 day)

Cash flows justified by removing contract boundaries and relevant technical provisions

The experience variance between the expected cash outflows under a *real - world environment* and the *expected cash outflows released by the opening best estimates*

The experience variance between the expected cash inflows under a *real – world environment* and the *expected cash inflows released by the opening best estimates*

*To invest real world net inflow according to the strategic asset allocation or*

*To move assets, after having divested real world net outflows, in a new set of assets to satisfy the strategic asset allocation*

It's worth noting that economic environment continues to be risk – neutral for the remainder time, i.e. from year 1 onwards

## Question 4: how to let real world environment share projections together risk neutral valuations?

ORSA projection replaces risk neutral with real world year by year, stopping at the end of each year with situation well different from the projection which would be gauged at that point with a simple run of assets and liabilities consistent with pillar 1

Consequences of the aforementioned replacement are several “experience variances” between expected [at opening year] risk neutral vs expected real world. Note that we ignore the actual values: the replacement is between expected vs expected in two different environments:

- real world bonus rates (revaluation of net premium reserve) against risk neutral bonus rates due to the direct consequences of *change of economic assumptions*;
- the change of bonus rates affects part of claims in proportion to their recognition in pro-rate temporis;
- real world frequency of surrender claims against risk neutral frequency of surrender claims due to the underpinning roles of benchmarks and assets returns in defining the part of surrender rates explained by PHB, dynamic policyholder behavior;
- the frequency of lapses affect the amount of recurrent premiums and additional premiums (top-ups) as depending on the contracts survived.

*to be continued* →



# ORSA future balance sheets. Real world environment. Change of economics

ORSA projection replaces risk neutral with real world year by year

Change of economic assumptions relates to the following:

- Interest rates
- Spreads and default
- Equity and property prices

Note: all those variables shall modify the economic scenario generators, it shouldn't be sufficient changing just the central scenario

Interest rates: if they increase (decrease), net unrealized gains of financial assets go down (up) and the discounting effects of future contractual cash flows make best estimates gone down (up). The more net unrealized losses, the lower bonus rates and technical provisions and vice – versa.

Moreover, the NAV of unit linked goes up with a significant change as of risk neutral with a consequent change of both assets and liabilities held in units. This adjustment could change material the expected switch between unit and participating components of hybrid contracts in case of existing contractual automatic switches.

Spread and default: government bonds survive (they do not default in real world) and corporate bonds survive more likely. A little realistic real - world default is present, anyway lower than under risk neutral → asset returns become higher and hence bonus rates as well, with a consequent increase of best estimates. Volatility adjustment has a little reaction (decline), however IFRS17 Liquidity Premium is more sensitive → best estimates have a little increase and IFRS17 PVFCF a significant increase.

Equity and property prices are greater in the real world → assets returns become higher and hence bonus rates as well, with an increase of best estimates. Volatility adjustment does not react, however IFRS17 Liquidity Premiums might change (decline). → IFRS17 PVFCF have a little increase.

# ORSA future balance sheets. Real world environment. Change of economics. Change of bonus rates, change of FDB

## Change of bonus rates

In the previous page we have seen that bonus rates go up when shifting from a risk neutral to a real world in relation to (1) better spread and default and (2) better equity and property prices, whereas the relationship with increase of interest rates is not always the same and it's trickier

FDB is the part of Solvency II (SII) best estimate as well as the part of IFRS17 PVFCF which allows for Future Discretionary Benefits, namely future bonus rates.

Therefore, when we stay at time 0 and replace risk neutral economic with real world economics from time zero to time 1, we do two things:

Action 1. Replace assumptions about liability cash flows and asset returns from time 0 to time 1

The new asset returns shall be considered as actual returns and their change from expected returns as "experience variance"

The new liability cash flows shall be considered as actual cash flows and their change from expected cash flows as "experience variance"

Action 2. Replace indirectly the assets returns and liability cash flows from time 1 onwards, including everything falling inside the perimeter of our projections, the first 5 years.

For examples, (1) actual surrender claims (from 0 to 1) diverge from expected (from 0 to 1) → volumes at time 1 are different → expected liability cash flows from time 1+ are different → SII best estimates and IFRS17 PVFCF are different

(2) Bonus rates from time 1+ have changed → all future claims are different → best estimates and PVFCF are different. Moreover, given that the benchmark used for PHB has not changed (it remains the same as at time zero even though could be shifted by 1 year), the PHB has a different impact → lapse rates change from time 1+ onwards

*to be continued* →

# ORSA future balance sheets. Real world environment. Change of economics. Change of bonus rates. Experience Variances

## Experience Variances due to change of bonus rates

In the previous page we have seen a couple of experiences variances

In Solvency II, those experience variances have an impact to the own funds, hence OF at time 1 after a replacement of real - world vs risk neutral causes a reassessment of Own Funds, also referred to as (using different wordings), Net Assets, Eligible Assets.

In IFRS17, the situation is more complex:

An economic variance is in scope of Variable Fee Approach, including the balances between the realized gains and losses (like those originating from review of spread and default) and the effects on the liability side (such as the replacement of expected risk neutral bonus rate from 0 to 1 with an actual real world bonus rate from 0 to 1) → a positive balance is driven to raise the CSM through the “entity share of change in fair value of the underlying items” (or to reverse an opening loss component) whereas a negative balance is driven to reduce the CSM (or to cause / increase the loss component)

An underwriting variance, such as that on surrender claims, should be split down in two components

- Change of non – distinct investment component (the case we are dealing with) whose marginal impact is recognized to CSM or Loss Component
- Change of insurance service (this impact is negligible in the case we are dealing with) whose entire impact is recognized to P&L

It's worth noting that movements of loss component are recognized to P&L: increase to losses and reversal to profits.

*to be continued →*

# ORSA future balance sheets. Real world environment. Change of economics. TVOG (1/4)

## Refresh of TVOG

Time Value of Options and Guarantees is synonym of difference between (1) the stochastic best estimate or PVFCF and the (2) Non – stochastic ones.

To not be confused with PHB whose work is referred to as “dynamic” model or feature.

However, TVOG comprises the marginal impact of replacement of deterministic PHB with a stochastic PHB

Options allow for future bonus rates, that’s the reason why TVOG relates to FDB, that is the difference between the stochastic FDB and the deterministic FDB is part of TVOG

However, part of TVOG relates to the cost of financial guarantees

Looking at the replacement of risk – neutral vs real world economics from time 0 to time 1, things become better → TVOG for financial guarantees is released for the mere effect of passage of time, anyway without corresponding adverse experience between expected cash outflows from time 0 to time 1 and actual cash flows → the release of TVOG provokes an increase of Solvency II Own Funds and an economic experience in IFRS17, driven to CSM or Loss component.

It’s worth noting that, the experience variance on TVOG and, more in general, the experience variance of balance of net realized gains and losses, despite are recognized at first glance to CSM, they might be driven to P&L via the “Bow Wave” adjustment.

*To be continued →*

# ORSA future balance sheets. Real world environment. Change of economics. TVOG (2/4)

## Focus on TVOG for financial guarantees. How financial guarantees are assessed?

Financial guarantees are represented in two main alternative ways:

- Technical rates when they are recognized in premium rates which are lower than without financial guarantees, This type of recognition requires actuarial techniques
- Minimum bonus rates when they are recognized through a minimum bonus rate.

There's also a combination of both, for example

From an asset return of 3.2%, the insurer allocates 2.0% to policyholders (1.2% being the gross management fee) whose technical rate is 0.5%.

The bonus rate then satisfies the following:

$$(1+\text{Bonus rate}) \times 1.005 = 1.02 \rightarrow \text{bonus rate} = (2\% - 0.5\%) / 1.005 \quad [1]$$

Which changes the Net Premium Reserve, that may be conventionally figure out as the Reserve owned by the policyholder.

For single premium contracts, recurrent premiums and traditional annual premium contracts where bonus rates are applied to the premium as well, the bonus rate achieved by equation [1] is applied to the sum assured as well

For traditional constant premiums, we need an additional step

*to be continued* →

# ORSA future balance sheets. Real world environment. Change of economics. TVOG (3/4)

## Focus on TVOG for financial guarantees. Financial guarantees applicable to traditional contracts?

For traditional constant premiums, we need an additional step.

Given P the pure premium and NPR the Net Premium Reserve prior to apply bonus rate :

$$\text{NPR} = \text{SUM assured} \times \text{PV}(\text{outflows}) - P \times \text{PV}(\text{annuity}) \quad [2]$$

*The revaluation rate “r” applicable to sum assured whose Net Premium Reserve is NPR, shall satisfy the following equation:*

$$\text{NPR} \times (1 + \text{bonus rate}) = \text{Sum assured} \times \text{PV}(\text{outflows}) \times (1 + r) - P \times \text{PV}(\text{annuity}) \quad [3]$$

It could be replaced with a very good proxy that has been used by the national insurance market since the end of '80s:

$$\text{Sum assured (t)} = \text{Sum assured (t-1)} \times (1 + \text{bonus rate}) - [(n-t)/n] \times \text{bonus rate} \times \text{Initial Sum assured} \quad [4]$$

Where t and n ( $1 \leq t \leq n$ ) are respectively the elderly of contract and the duration of premium payment.

Nevertheless, the proxy makes prospective, retrospective and Fourret formulaic supply different results, so that the mandatory choice for life insurance was conventionally set in favor of prospective NPR (mandatory also for all the types of products) to be used in local GAAP

# ORSA future balance sheets. Real world environment. Change of economics. TVOG (4/4)

## Focus on TVOG for financial guarantees. Could Negative TVOG be possible?

Many times, TVOG appears negative, above all on business whose guarantees are in the money.

This feature does not represent a mistake, rather it depends on that SII best estimates and IFRS17 PVFCF are not able to identify and gauge the cost of guarantees beyond the point when the gross management fee for the insurer becomes nil.

This cost is by definition borne by fault of guarantees, anyway it is not charged to technical provisions. Technical Provisions do not allow, by construction, for future investment income. Thus, when future investment income becomes significantly low compared to the guarantees, its cost is not included in the reserves. However, under not extreme circumstances, when future investment income is proportional to the gross management fee earned by the insurer, there exists correlation between expected investment income and technical provisions. The example below shows what happen in an extreme adverse case which unveils a negative TVOG.

Gross investment income in central scenario: 3.2%; financial guarantee: 3%; gross management fee 1%.

The non – stochastic cost of guarantee is 0.8%, that is the reduction of theoretical gross management fee.

In a stochastic approach with 4 scenarios: 4%, 3.4%, 3.0%, 2.4% (averaging 3.2%), the TVOG is

$$\text{TVOG} = (0 + 0.6 + 1.0 + 1.0)/4 - 0.8\% = 0.525\% - 0.8\% = -0.275\% \quad [5]$$

The reason why the stochastic cost of financial guarantee is lower than its non – stochastic cost resides in the 3<sup>rd</sup> and 4<sup>th</sup> scenarios whose costs cannot go above 1%. The 1<sup>st</sup> scenario provides a full management fee whereas in the 2<sup>nd</sup> scenario the insurer waives 0.6% of its management fee.

## How does Strategic Asset Allocation impact the forecast?

Asset Allocation (briefly StAL thereafter) consists in the balance of proportion of assets – including cash – for each of the five years of projection.

It interacts with and against the future management actions embedded in the ALM model being used to run technical provisions of participating contracts, briefly StALM.

While StALM look at the choice of assets to sell for ensuring claim settlements and to purchase for premium inflows stemming from renewal premiums and additional premiums which do not meet contract boundaries,

In contrast, StAL look for the balance at the ending balance irrespective of the activity of selling and purchases, in particular taking into account the entrance of 1 year of new business and the consequences of release of 1 year of contract boundaries existing at the opening balance.

Furthermore, StALM at opening balance do not take into account the replacement of 1 year risk neutral vs real world, whilst StAL do so.

The entrance of 1 year of new business has an influence – not only in terms of volumes of assets to be managed – also in terms of risk profile. For example, should new business be concentrated in deferred annuities with a long duration, more than 12 years, greater than the mean of portfolio in force at opening balance → the StAL shall foresee to invest in assets of longer duration from the end of year and with higher illiquidity features given the higher predictability of relevant lapses



## How does Strategic Asset Allocation impact the forecast?

Steps of decisions.

- Run the risk neutral ALM using the management actions embedded in the ALM used in Pillar 1
- Add new business and replace real world vs risk neutral economics
  - new business is invested according to the StAL set at opening balance
- Look at the asset portfolio composition at the end of year
- Replace the projected asset allocation with the new desired asset allocation

## Question: do we replace assets assuming selling and purchase activities?

If so,

In respect to sales: we realize gains and losses instead to maintain them as unrealized.

If realized, there's an impact on the yields of the segregated funds backing participating contracts and hence on the best estimates → need of resetting technical provisions at the end of year.

In respect to purchases: we could assume risk neutral earnings regardless of the type of investment

## How to perform Mass Lapse Shock

### Definition.

Mass Lapse is a sudden event of surrenders claims.

The word “sudden” entails happening even in just one day, anyway over a period not longer than 1 year, before the end of current year.

The word “surrenders” entails claim settlement, so as to exclude paid up and other events of policyholders’ insolvency which would originate mere changes of status of contracts without claim outflows.

The event provokes a decline of volumes managed by at least 5%. its calibration ranges between 5% to 35%

The event absorbs the lapse assumption used for the calculation of technical provisions, including its PHB (dynamic lapse rate).

For example, if the base lapse rate is worth 6% and PHB is 2% on average (on aggregate  $l_p=8\%$ ), for an aggregate Lapse rate by  $ag = 20\%$ , the increase of lapse rate over the next 1 year (Mass Lapse rate “ml”) shall satisfy the following relation:

$$ml \times (1-l_p) + l_p = ag \rightarrow ml = (ag-l_p)/(1-l_p) = 13.04\%$$

There are two alternative ways (approaches) to allow for mass lapse event in ORSA report

- Actual claims corresponds to mass lapse event and, immediately after, the balance sheet and the SCR are re-assessed on the base of the residual portfolio left
- The opening technical provisions reflect the change of assumptions about lapse rates for the next year

Irrespective of the approach, the mass lapse event is hard to be combined inside a simultaneous scenario together other underwriting risks.

## How to perform Mass Lapse Shock

There are two alternative ways to allow for mass lapse event in ORSA report:

- Actual claims corresponds to mass lapse event and, immediately after, the balance sheet and the SCR are re-assessed on the base of the residual portfolio left

If so, the unrealized losses become realized due to the need to get cash via the sale of financial assets → not feasible to assume realized gains and losses under real – world economics → the next yield of segregated fund declines, even materially → the PHB could become extreme at least in the forthcoming year → technical provisions of the remainder portfolio go up and SCR lapse up goes up; an eventual mass lapse treaty is still working well (to mitigate the Mass Lapse Risk of SCR) anyway to a lower extent due to the reduction of gap vs lapse up

TVOG relevant to financial guarantees goes up

FDB goes down and → LACTP goes down → Net SCR goes up

Moreover, the strong and sudden need to sell assets could cause the deviation from the opening Strategic Asset Allocation with a consequent action to restore the desired StAL at the end of year.

*to be continued* →

## How to perform Mass Lapse Shock

There are two alternative ways to allow for mass lapse event in ORSA report:

- Actual claims corresponds to mass lapse event and, immediately after, the balance sheet and the SCR are re-assessed on the base of the residual portfolio left

The Underwriting module of SCR declines in proportion to the residual portfolio survived after the ML event, with only 1 exception represented by the expense risk submodule.

In fact, the present value of future expenses may decline less than according to a simple proportion based on volumes under management if tools, machines and FTEs do not reduce in proportion.

- The opening technical provisions reflect the change of assumptions about lapse rates for the next year

If so, there's a sudden increase of technical provisions with an immediate adverse impact in the Own Funds; however, its strong decline spanned over the next 12 months allows for introducing the management action to use cash-inflows (for new business premiums as well as for premiums released from opening contract boundaries) to pay surrender claims instead of (or limiting to a lower amount) selling existing financial assets.

The most adverse consequence is that the SCR for lapse up risk increases materially because it shall be – by construction – set up in proportion to the base lapse assumption which includes the mass lapse assumption.

*to be continued →*

## How to perform Mass Lapse Shock

There are two alternative ways to allow for mass lapse event in ORSA report:

- The opening technical provisions reflect the change of assumptions about lapse rates for the next year

The increase of lapse up is able making an eventual ML treaty not efficient because it would reduce the GAP between the ML scenario and the lapse up scenario (or even makes the lapse up scenario greater than the ML scenario)

At the end of year, the actual surrender claims match the expected surrenders released from the opening (re-set) technical provisions with no further impacts in the own funds → the year end technical provisions and SCR decline in proportion to the portfolio exited as in the 1<sup>st</sup> way described before and (as consequence of recovery of lapse risk of SCR and the reassessment of efficacy of an eventual mass lapse treaty) the solvency ratio goes up again.

*It's worth noting that – not only the base lapse up risk raises immediately after a change of mass lapse assumption, also the PHB contribution might rise immediately in case it would be proportional to the base lapse assumption.*

Compared to the 2<sup>nd</sup> approach, the 1<sup>st</sup> one reduces the possibility to use management actions for mitigating the financial impact; in contrast, the 2<sup>nd</sup> approach exacerbates the strange property (or simplification) of SCR Standard Formula lapse up valuation technique so that generating unbelievable effects on the overall SCR.

## Nel Deferred Tax Assets

To foresee Solvency II projected Own Funds over the next 5 years, we need to project the deferred tax assets and the deferred tax liabilities:

### Background

The Own Funds are measured, by construction, net of taxes. Current taxes figures out in the projections as outflows of assets and, in P&L, as deduction of Local GAAP gross profits which become, by definition, Local GAAP net profits.

At first glance, in a theoretic world where Solvency II replicates Local GAAP, Solvency II gross profits match Local GAAP gross profits and hence current taxes as well.

However, Solvency behaves differently compared to local GAAP and can hide profits (losses) which must be managed through deferred tax liabilities (deferred tax assets) to be posted in Solvency II balance sheet.

Those hidden future profits or losses depend, by definition, on temporary differences of accounting. If not, i.e. for differences deemed to be permanent, there's no deferred tax liability or asset.

Since Solvency II does not own an income statement, but only a balance sheet, the valuation technique being used for deferred taxes pass through the analysis of changes of assets and liabilities recognized in Solvency II (changes from opening to closing balance) compared to the changes of the same kinds of postings recognized in Local GAAP. Unless differences are permanent, from different changes arise deferred taxes in proportion to the corporate tax rates. *To be continued* →

## Nel Deferred Tax Assets

### Methodology and simplifications

To simplify, the ORSA forecast could project assets and liabilities – for 1 year - before tax, before capital injection and before any movements of subordinated debt. The projection should be consistent with real world economic assumptions.

We get the net assets in local GAAP and the net assets in Solvency II prior to allow for deferred assets and liabilities (no allowance even for their opening values).

If the difference of change of net assets in local GAAP is better than in Solvency II → Solvency II recognizes new DTA in proportion to corporate tax rates, otherwise

If the difference of change of net assets in local GAAP worsens compared to Solvency II → Solvency II recognizes new DTL in proportion to corporate tax rates.

At last, the new DTA or the new DTL are added to the opening DTA or to the opening DTL to achieve a closing DTA or closing DTL

In case the net position is in DTA, we need to perform an impairment test against future profits stemming from the expected new business to be incepted not only over the remainder period covering the five years in scope of ORSA & Strategic Plan, also further future periods → we need assumptions consistent with the provisions of first 5 years.

Their underlying assumptions should be risk – neutral market consistent

## Loss Absorbency Capacity of Deferred Taxes “LACDT”

LACDT is the reduction of Basic SCR and of Operational Risk which brings forward the saving in paying corporate taxes in future 7 years thanks to future “taxable profits” emerging in the same years.

The underpinning rationale lays on the nature of SCR (before LACDT): it’s a loss recognized according to Solvency II metrics emerging in case risks calibrated at 99.5% VAR (the calibration for Standard Formula) would incur immediately at time of valuation date, i.e. the reporting date in Pillar I and time 0, time 1, time,....,time t=5 in ORSA forecast thereof the first in the same conditions of pillar 1 and the others after t-1 years of real world.

We call initial start of projection any time pillar II  $1 \leq t \leq 5$

This loss, once reported in Local GAAP in future years, would offset profits subject to corporate taxes emerging from sources which were not taken into account in assets and liabilities at the evaluation date, such as future new business.

If the net balance of profits and losses estimated in this way is greater than zero for 7 years beyond the start of projection, then it justifies [part of] LACDT.

It’s worth noting that future new business should be estimated, at each start of projection, according to a stress environment, which varies with time . The stress applies both in terms of reduced volumes of written premiums and in terms of profitability per 1 € of written premium. If material, there’s also an impact of ceded reinsurance

*to be continued →*



### Loss Absorbency Capacity of Deferred Taxes “LACDT”

Future new business should be estimated, at each start of projection, according to a stress environment, which varies with time. The new business is limited to 5 out 7 years though its contribution to profits last 7 years. This is consistent with local Regulation IVASS 35.

Since the stress environment depends on the drill down of SCR into its components (sub-modules of standard formula), we need to repeat the calculation 5 time, for t varying into [1,5]

The second source of LACDT is called “PULL – to – PAR”: it is the natural recovery of part of initial stress, limited to the market module. The underpinning rationale is that, to the extent that the insurer is able to keep the financial assets in its portfolio with 5-7 years, the unrealized losses measured by SCR can be recovered naturally.

For using it, we need to perform an analysis of assets and liabilities matching.

As regard Pillar II, that analysis should be repeated at any start of projection

The third source of LACDT is represented by the net DTL posted in the balance sheet, which in pillar II means posted at any start of projection. In case of net DTA, not only the contribution of DTL shall be set to nil, also the future taxable profits stemming from new business has to be counted after deduction of DTA

For example, DTA 100 has been recognized thanks to future corporate taxes stemming from future new business by 150 (impairment test performed in central environment, unstressed) so that we have available only 50 for LACDT which become 40 by fault of restriction stemming from the stress environment

*to be continued* →

## Loss Absorbency Capacity of Deferred Taxes “LACDT”

Remind also:

- The contribution of future new business and pull-to-par should be split down for each future year and, in doing so, reduced by the credibility factor.

The credibility factors depend on the distance of time from the evaluation date in pillar I; in pillar II, they depend on the distance of time from the start of projection, by construction

- Future new business is limited to the 1<sup>st</sup> 5 years from the evaluation date in pillar I and reduced at 80% (for local fiscal rules); in pillar II is limited to 5 years from the start of projection and reduced at 80%.
- The balance of net DTA or net DTL shall be cleaned by local tax credits (frequent) and liabilities (rare). For example, Local tax credits 20, temporary differences between Solvency II and local GAAP entail net DTL by 100 and Solvency II balance sheet shows  $100 - 20 = 80$  as DTL. For the purpose of LACDT, DTL are worth 100.
- At last, very important, check whether the Entity decided to limit LACDT to only IRES instead of to the whole corporate taxes which comprise IRAP (Net DTA / DTL posted in Solvency II allows for IRAP). If so, the Net DTL used for LACDT are lower than posted in balance sheet.

## Loss Absorbency Capacity of Technical Provisions “LACTP”

### Background

LACTP is the potential reduction of FDB part of SII best estimate which can be achieved via reduction of bonuses

Participating contracts promise bonus rates over the following years.

Future bonus rates must be allowed for – in advance – in technical provisions

They are referred to as “FDB” which stands for [present value of] Future Discretionary Benefits: the acronym was introduced in Solvency II, anyway it is widely used in IFRS17 as well

Moreover, non-traditional participating contracts have already provided bonuses in past years which, since they are not consolidated (according to the insurance contractual conditions), they maybe recovered by the insurer in case of necessity, for example should periods of economic crises challenge the balance sheet of the Undertaking.

To let past bonus rates be included in FDB, rather than in best estimates for guarantees, we need to understand what level of negative bonus rate could be allocated to policyholders to fulfil the financial guarantee.

As example: Pure premium 1000, after 3 years the net premium reserve has become 1100 thanks to 70 of past bonuses and 30 of financial guarantees. Financial guarantees will become liquid after further 2 years, totaling 1050 → negative bonus rates are -25 for each of the remainder two years.

Thus, if the FDB for future bonuses for traditional participating contracts is worth 120, the FDB including non – traditional participating contracts is worth 170, all other being equal.

## Loss Absorbency Capacity of Technical Provisions “LACTP”

In Pillar I LACTP is the difference between the FDB before and after shock requested by the Standard Formula.

The Gross Risk is gauged as the increase of best estimate for guarantees and expenses as consequence of shock. Negative changes (i.e in favor) are permitted at first glance.

The LACTP is gauged as the change of best estimate for FDB. Positive and negative changes shall – both - not to be zeroized The Net [of LACTP] equates the Gross risk adjusted by the LACTP.

The unit of account is the Standard Formula sub-module. For each unit of account, the Net Risk cannot be negative, that is, if negative, must be zeroized

After those steps, we need to check that the overall LACTP at legal entity level is not greater than the FDB; should LACTP be greater than FDB, it shall be reduced to the level of FDB. The reduction has to be allocated to the sub-modules.

In Pillar II, the same management actions as those that justify the LACTP (i.e. the reduction of bonus rate) might be really assumed from  $t$  and  $t+1$ , i.e. between two starts of projections.

This possibility is true in case ORSA forecast is assuming that the market will be subdued to adverse economic conditions between two starts of projections.

However, the most likely assumption relies on real world to replace risk neutral conditions

*to be continued* →

## Loss Absorbency Capacity of Technical Provisions “LACTP”

However, the most likely assumption relies on real world to replace risk neutral conditions.

If so, the real - world actual bonus rates exceed the opening expected risk neutral bonus rates.

Such an experience GAP produces a loss.

On the asset side, the replacement of risk neutral with real – world investment income produces a profit.

The net balance of the two aforementioned real – world effects flows to P&L, that is in Own Funds under Solvency II.

Despite it’s usually a profit, we have to reduce the LACTP moving the start of projection from  $t$  to  $t+1$ , since we lose 1 year of exposure to bonus rates.

This step is one of the most challenging technical aspect of the ORSA projection

Nevertheless, such reduction should be offset with the contribution of new business which brings liabilities with their own FDB

That said, moving from the start of projection from  $t$  to  $t+1$  entails 1 year or real world more which determines an increase of Own Fund and insignificant effects on LACTP insofar as new business is able to bring FDB (high volumes, low financial guarantees) → little increase of Solvency ratio.

## Interaction between NB and Inforce

When NB enters in a portfolio its technical provisions and its SCR may be estimated through running NB and Inforce all together, extract the results for only NB and compare them with the run “standalone”.

The difference is stored in, let me say “A” and is said “standalone” impact [on NB]

The run “standalone” is achieved by applying the same formulaic to empty portfolios of assets and liabilities as if the first business incepted were that NB. In particular, the expected yields of the assets where to invest premiums is close to the par yield curve (volatility adjusted) although local accounting rules could make their time distribution different.

At the same time, the inclusion of NB provokes a change in technical provisions and in SCR of Inforce.

The difference is stored in “B” and is said “marginal impact” [on Inforce]

The more A matches B, the higher the credibility of runs.

If we look at the liabilities, that’s the same exercise we know as “mutualization” across generations which implies the transfer of CSM from NB to Inforce in case  $A < 0$  (and  $B > 0$ ) or from Inforce to NB in case of  $A > 0$  (and  $B < 0$ );  $|A| = |B|$

## SCR – Background

The ORSA report requires to project the SCR in the forthcoming 5 years.

The SCR is necessary both for (1) estimate the solvency ratio and (2) to estimate the “risk margin” through its underwriting, counterparty and operational components (no market component)

Since the overall exercise has the main purpose the identification of time when the entity meets concerns and, eventually, the solvency ratio drops down the level of risk appetite (that could range between 120% and 170%), the valuation of SCR is fundamental

The actuarial system should be able to replicate the standard formula shocks in future periods, where the granularity of year is enough for purpose.

The key steps are:

- to run at future periods the portfolios of assets and liabilities which is in force as at the valuation date (Inforce)
- to run future new business (NB) to add on top of the Inforce
- with reference to Inforce, to estimate the marginal impacts of new business
- with reference to NB, to estimate the effects of Inforce compared to a standalone run

## SCR – Gross risk

The ORSA report requires to project the SCR in the forthcoming 5 years.

The risk profile of the standard formula shall be calculated yearly by applying the same methodology as in Pillar I.

As for the contribution of the underwriting risks, we should take care about the nature of business incepted since time 0 onwards.

For example, if we assume a significant underwriting of LTC, we have to expect more disability and longevity risks in future periods.

The trickiest risk is lapse up. There's a strong dependence of lapse up with the base lapse assumptions: the higher base lapse rates, the higher the lapse up.

Furthermore, lapse up depends on the expected profitability: the higher expected future profits, the higher lapse up; onerous contracts may be exposed to lapse down. Therefore, in case the profitability of new generations will be different as of the business in force, it's normal to see a change of lapse up.

Mitigation of underwriting risks could expire in advance of five years. If so, the Report should clarify whether there's the assumption to renew the deal with the reinsurance counterparty.

Contract boundaries on pillar I, despite permit easier calculations in pillar I reporting, generate problems for the projections in ORSA

*to be continued →*



## SCR – Gross risk

Contract boundaries on pillar I, despite permit easier calculations in pillar I reporting, generate problems for the projections in ORSA.

In case additional premiums or recurrent premiums are subject to contract boundaries in Pillar I, they must be added to new business; in doing so, not only they contribute to increase technical provisions in the projections, also they play a role in the refresh of SCR.

In case of options tied by contract boundaries in Pillar I, they would enter in our risk profile (SCR) in each projection year and, of course, in technical provisions.

The strategic asset allocation should be independent on contract boundaries.

Nevertheless, the forecast returns depend on the volumes of assets which we expect to manage for bearing the liabilities in future years. Therefore, in case we exclude in  $t > 0$  future premiums to be accounted for in  $t+1, t+2, \dots$ , the financial returns of the assets are calculated under the assumption to manage the existing portfolio in run off where we don't expect future inflows.

Just on year later, at the starting date  $t+1$ , we must take into account 1 year of recurrent premium, assumed to be posted and received in  $t+1$ : this event changes the financial returns as of the previous previsions, all other being equal.

That said, eliminating contract boundaries lets us perform easy and understandable projections.

## SCR – Gross risk

The market risk profile depends on the periodical changes of asset allocation in run – off

Every year, the shock on the own funds for market risks is greater than the market risk contribution to SCR. The main difference is due to the consideration of government bonds, a secondary effect (opposite) is due to the consideration of volatility adjustment and a third one is due to sequence of events. Look at the next pages for details.

The market risk contribution to SCR allows for interest rate risk.

Although it's often lower than the spread risk, it's difficult to gauge and it is also volatile across years

At time of writing (June 2024) interest rate up likely prevails.

In case of strategy would indicate the need to shorten the duration of assets, looking at actions of investing future premiums, in order to reduce the exposure to credit and spread risk, the consequence is the increase of exposure to interest rate down.

If so, the interest rate down could prevail in future years, and that's particularly true if the entity is willing to incept long term business and is clever to reduce lapse rates.

Diversification within sub-modules (risks in detail) and across modules (risk in aggregate) might change over time. Therefore, the risk profile should be projected gross of diversification effects and after that diversification shall be allowed for.

## SCR – market risk compared to impact of market risk shock in the own funds

Every year, the shock on the own funds for market risks is greater than the market risk contribution to SCR. The main difference is due to the consideration of government bonds, a secondary effect (opposite) is due to the consideration of volatility adjustment and a third one is due to sequence of events.

Government bonds are generally excluded from the contribution to Standard Formula Spread Risk and from SF concentration risk. Instead, they are included in the shock of own funds and could even have a heavy contribution.

Volatility adjustment does not work in SCR – spread risk - because it can't be dynamic

Instead, a liquidity premium adjustment might have an important contribution (mitigation) in phase of shock of own funds for spread & default of the assets

Sequence of events entails that shock in own funds brings forward the re-assessment of SCR. The latter is mitigated by the former.

For example, if equity assets by 100 are subject to 25% shock in own funds (with a loss measured in -25), the next day equity risk contribution to SCR, let me say 30%, is applied to 75 rather than to 100, hence it's worth – 22.5 instead of -30.

### Market risk and management action aimed to meet cash flows matching

Coming back to interest rate risk, the most important management action consists in ensuring a good cash flows matching between assets and liabilities or at least to ensure assets and liabilities had similar durations.

It's not so easy: the aforementioned management action (briefly MNA thereafter) is aimed to reduce the exposure to changes of interest rates, anyway it maybe in contrast with the purpose to reduce the exposure to credit risk.

These goals cannot be achieved all together.

The possibilities (i.e. the alternatives) are:

A) the entity relies on the expected profits (VIF) being originated in the long term from (1) underwriting & biometric services and (2) expenses.

For doing so, it offers long term products, for example endowments with maturities at 20 years or more and deferred annuities & Individual Pension Funds. Moreover, it tries to reduce lapse & surrender rates.

The longer duration of liabilities ensures greater underwriting VIF. In case it relates to new business (or premiums released by previous contract boundaries) → higher impact on the Solvency II own funds and higher impact on IFRS17 CSM (Contractual Service Margin)

The longer duration of liabilities entails also additional exposure to interest rate [risk] down which could be reduced via purchase of assets similarly directly exposed to interest rates (no equities, no properties), with long duration.

However, financial assets with a long duration are exposed to spread risk compared to assets with same rating (probability of default) and short duration.

*To be continued →*

### **Market risk and management action aimed to meet cash flows matching**

To avoid significant exposure to spread risk, the entity should entrust on bonus rates.

The possibility to make future bonus rates drop down in case of rising credit spread is referred to as “Loss Absorbency Capacity of Technical Provisions” and known with the acronym LACTP.

LACTP, as said before, is the change of FDB best estimate, due to increase of risks, including the spread one.

To be clear, the LACTP is effective on every type of market risk and even in relation to underwriting risks. However, its role in mitigating spread risk is important.

We expect also the contribution of volatility adjustment (VA) in solvency II and liquidity premium (LP) in IFRS17: the higher the credit spread, the higher the VA and LP. However, VA does not work well, hence the insurer can't trust on VA in ORSA projections to be consistent with pillar I.

That said, to ensure mitigation against credit spread from the liability side, entities might work on LACTP. Products with more allowance for FDB are those participating contracts without recurrent consolidation of bonus rates. Products which permit negative bonus rates should things worsen (such as credit spread) with the mere commitment of financial guarantees (for example 0% incase of death or / and at maturity) have the higher proportion of FDB / overall best estimate and hence they fit for purpose.

*to be continued →*

### **Market risk and management action aimed to meet cash flows matching**

Strategy B) to reduce the duration of assets and mitigate the risk of interest rate down on technical provisions.

Strategy C) to buy long term assets with a good rating and purchase derivative against interest rate up

The last strategy apparently seems odd since long term liabilities should react promptly to rising interest rates through the characteristic of discounting future cash flows.

Nevertheless, the increase of interest rates generates unrealized losses which likely cannot be suddenly allocated to policyholders, namely, they are not able to reduce bonus rates, unless they are realized.

Strategy D) to buy long term assets with a good rating and sell products with fund for future financial participations.

Indeed, the rule underpinning local regulation ISVAP 38 compels to allocate financial losses to participating contracts if and only if financial losses are realized (or impaired), namely the relevant assets are sold or exit from the segregated fund.

If so, the relevant realized investment income for disposal bites the local GAAP P&L, unless they were already posted since classified as available for sale in Local GAAP.

Furthermore, the entity shall pay attention to its own investment policy on whether the selling of financial assets classified (locally) as held to maturity is possible and, if so, for what volumes.

### **Market risk and management action aimed to meet cash flows matching**

The drawback of such a decision is the decline of bonus rates which is able to generate more surrender claims → reduction of insurance VIF, liquidity concerns, reputational risk, reduction of new business, need to offer special sale inducement or bonus rates to attract new customers (or reduce its own gross management fees, waive of front - end – loadings and surrender penalties)

A good alternative is to sell insurance products with participating features through the fund for future profits (fondo utili).

This kind of product allows the insurer to allocate financial losses realized for disposal to policyholders, anyway through a reduction of the liability for future profits rather than to reduce immediately the bonus rate.

The liability for future profits shall be non – negative, hence the downward movement can be done insofar as the insurer has posted there the financial gains realized for disposal during previous years.

## Other management actions

For how much time the Entity can change management actions and reflect them in the post-shock environment?

Management actions are more effective in the method one shock – no recovery than in the method of multiple shocks and recoveries

### Underwriting management actions:

- Reinsurance of mortality
- Reinsurance of mass lapse risk
- Diversification of biometric exposure → reduce aggregated diversified risk for same sum of undiversified single risks
- selling LTC and life contingent annuities (longevity exposure) to diversify mortality exposure
- Retain business in force with commercial initiatives → low lapses → reduction of technical provisions and of SCR – Lapse Up
- Reduce SCR exposure focusing on unit linked and selling hybrids with more weight on unit linked component
- Rise new business in the medium term → increase LACDT → reduce SCR

### Investment management actions:

- Spread and default; rating → reduce duration, invest in high quality corporate bonds
- Diversification of counterparties
- Diversification of asset type → reduce aggregated diversified risk for same sum of undiversified single risks