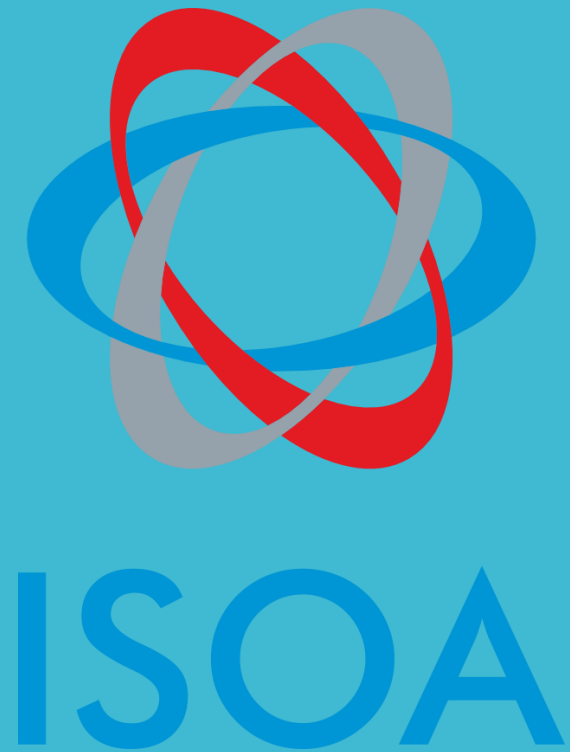# IFRS17:

Misleading deviations
in the calculation of the CSM with FVA

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Intro

2022 has finally come, and it is the first year for the transition to the IFRS17 standard.

With its introduction, the great news brought by the standard concerns the **Contractual Service Margin,** a reference quantity for identifying the future suspended profits of the insurance contracts.

- The standard clearly identifies how to determine the CSM at inception of the contracts, as well as how to roll forward it during its duration. However, the problem arises of evaluating it for the existing portfolios, which represent the vast majority of the insured volumes of the companies.

- The first best in the standard would be determine the CSM by applying IFRS17 considerations starting from their inception date, this method is called Full Retrospective Approach.

- However, sometimes the data to carry out these arguments are not available, and not even for its modified version, Modified Retrospective Approach, which allows to go backwards by exploiting actual accounting values.

Problem: CSM estimation

For this reason, an intuitive method is used, the so-called **Fair Value Approach**: the underlying idea is that as Capital Requirements are prudence margins made on the Best Estimate Liabilities to cover unexpected variations given by certain market scenarios, in case of the best estimate scenario really happens, this capital requirements should represent the expected profit of the future existing business.

- Here is where the problem arises: this idea is based on an estimate, which does not reflect the real expected profitability of the contracts, but it is based on their capital requirement volume.

- There are cases in which the high or low capital absorption of the business leads to overestimate or underestimate the expected future profit of such contracts, leading to distortions. This under IFRS17 has important impacts on the income statement, and is a factor that must be kept under observation.

Formula

FVL_{RW} effective market price of the insurance liabilities

$FCF_{IFRS\ 17}$ the liability values under IFRS17 (i.e. $PVFCF_{IFRS\ 17}$ + $RA_{IFRS\ 17}$)

$PVFCF_{RW}$ the liability values under Real World assumptions

RA_{RW} a Prudence Margin as a top adjustment of the best estimate liabilities

Cost of Capital (CoC) the capital requirement needed to take over the obligations

CoC_{rate} the cost of capital rate applied by the Company

SCR_i the future undiversified Capital Requirements specific for each UoA measured under the Solvency 2 Standard Formula

j is the cost of equity

- The idea:

$$CSM = FVL_{RW} - FCF_{IFRS\ 17}$$

$$= (PVFCF_{RW} - PVFCF_{IFRS\ 17}) + (RA_{RW} - RA_{IFRS\ 17}) + CoC$$

- with:

$$CoC = CoC_{rate} \cdot \sum_{i=0}^{n} \frac{SCR_i}{(1+j)^{i+1}}$$

When the FVA fails

Types of contracts:

Low mortality terms

Annuities

LTC

Low / high capital absorbtion products

Very short / very long products

- When the contacts have some characteristics that should lead to an unproportional evaluation of the capital requirement compared to the dimension of the reserves, this could lead to a miss-estimation of the CSM at transition.

- This could happens when the duration of the liabilities are particularly short or long, when the products for some reason have a great capital absorption despite their profitability, and this is typical for annuity products.

Examples

General parameters

Always:

5 year of coverage

Non partecipating products

Unique premium

- Example 1: Temporary product, 5 years coverage, lump sum

- Example 2: Annuity product, 5 years coverage, 10 years annuity

- Example 3: Annuity product, 5 years coverage, 20 years annuity

Example 1

Under estimation of CSM.

CSM target > CSM estimated

In this case the SCR is mainly driven by mortality, with not a high magnitude.

The contracts are lump sum, no LIC is allocated due to the immediate payments.

With the current cost of capital and coc rate, and a light difference between real world and ifrs17 values, the CSM is underestimated.

Data

Asset backing	14.000.000
PVFCF RW	11.110.000
RA RW	1.155.000
PVFCF IFRS17 LRC	11.000.000
PVFCF IFRS17 LIC	-
RA IFRS17	1.100.000
PVFP	3.000.000

$$CSM\ target = PVFP - RA_{IFRS17}$$

CSM target	1.900.000

CSM calculation

PVFCF RW - PVFCF 17	110.000
RA RW - RA 17	55.000
Cost of capital j	9%
Coc rate	8%
NPV SCR	**4.351.237**

$$CoC = CoC_{rate} \cdot \sum_{i=0}^{n} \frac{SCR_i}{(1+j)^{i+1}}$$

CoC	**350.488**

$$CSM = (PVFCF_{RW} - PVFCF_{IFRS\ 17}) + \\ + (RA_{RW} - RA_{IFRS\ 17}) + CoC$$

CSM Estimate	**515.488**

Year	Fwd rates	Driver SCR (math reserve)	SCR SII	Coverage Unit	CSM BoP	Unwinding	Release	CSM EoP
2022	-0,56%	12.221.000	2.200.000	14.443.000	515.488	(2.861)	(170.818)	341.808
2023	-0,18%	9.776.800	1.466.667	11.554.400	341.808	(599)	(136.655)	204.554
2024	0,08%	7.332.600	880.000	8.665.800	204.554	174	(102.491)	102.237
2025	0,19%	4.888.400	440.000	5.777.200	102.237	190	(68.327)	34.099
2026	0,19%	2.444.200	146.667	2.888.600	34.099	65	(34.164)	-
2027	0,30%	-	-	-	-	-	-	-

Example 2

Normal estimation of CSM.

CSM target = CSM estimated

In this case the SCR is driven by mortality and longevity, with a medium magnitude.

The contracts are annuities, with a coverage of 5 years and a payment of the annuities during 10 years. So LIC is allocated due to the annuity payments of the incurred claims, previous and futures. RA and SCR have increased due to the LIC, since in this case the LIC is not certain.

With the current cost of capital and coc rate, and a light difference between real world and ifrs17 values, the CSM is estimated in a good way.

Data

Asset backing	14.000.000
PVFCF RW	11.110.000
RA RW	1.732.500
PVFCF IFRS17 LRC	11.000.000
PVFCF IFRS17 LIC	11.000.000
RA IFRS17	1.650.000
PVFP	3.000.000

$$CSM\ target = PVFP - RA_{IFRS17}$$

CSM target	1.350.000

CSM calculation

PVFCF RW - PVFCF 17	110.000
RA RW - RA 17	82.500
Cost of capital j	9%
Coc rate	8%
NPV SCR	**13.564.204**

$$CoC = CoC_{rate} \cdot \sum_{i=0}^{n} \frac{SCR_i}{(1+j)^{i+1}}$$

CoC	**1.092.582**

$$CSM = (PVFCF_{RW} - PVFCF_{IFRS\ 17}) + \\ + (RA_{RW} - RA_{IFRS\ 17}) + CoC$$

CSM Estimate	**1.285.082**

Year	Fwd rates	Driver SCR (math reserve)	SCR SII	Coverage Unit	CSM BoP	Unwinding	Release	CSM EoP
2022	-0,56%	12.221.000	4.400.000	14.443.000	1.285.082	(7.132)	(425.841)	852.109
2023	-0,18%	10.998.900	3.600.000	11.554.400	852.109	(1.495)	(340.673)	509.942
2024	0,08%	9.776.800	2.880.000	8.665.800	509.942	433	(255.505)	254.870
2025	0,19%	8.554.700	2.240.000	5.777.200	254.870	472	(170.336)	85.006
2026	0,19%	7.332.600	1.680.000	2.888.600	85.006	162	(85.168)	-
2027	0,30%	6.110.500	1.200.000	-	-	-	-	-
2028	0,40%	4.888.400	800.000	-	-	-	-	-
2029	0,52%	3.666.300	480.000	-	-	-	-	-
2030	0,66%	2.444.200	240.000	-	-	-	-	-
2031	0,76%	1.222.100	80.000	-	-	-	-	-
2032	0,75%	-	-	-	-	-	-	-

Example 3

Under estimation of CSM.

CSM target < CSM estimated

In this case the SCR is driven by mortality and longevity, with a high magnitude.

The contracts are annuities, with a coverage of 5 years and a payment of the annuities during 20 years. So LIC is allocated due to the annuity payments of the incurred claims, previous and futures. RA and SCR have increased due to the LIC, since in this case the LIC is not certain.

With the current cost of capital and coc rate, and a light difference between real world and ifrs17 values, the CSM is overestimated.

Data

Data	
Asset backing	14.000.000
PVFCF RW	11.110.000
RA RW	3.780.000
PVFCF IFRS17 LRC	11.000.000
PVFCF IFRS17 LIC	50.000.000
RA IFRS17	3.600.000
PVFP	3.000.000

$$CSM\ target = PVFP - RA_{IFRS17}$$

CSM target	(600.000)

CSM calculation

CSM calculation	
PVFCF* - PVFCF	110.000
RA* - RA	180.000
Cost of capital j	9%
Coc rate	8%
NPV SCR	**54.997.464**

$$CoC = CoC_{rate} \cdot \sum_{i=0}^{n} \frac{SCR_i}{(1+j)^{i+1}}$$

CoC	**4.429.988**

$$CSM = (PVFCF_{RW} - PVFCF_{IFRS\ 17}) + \\ +(RA_{RW} - RA_{IFRS\ 17}) + CoC$$

CSM Estimate	**4.719.988**

Year	Fwd rates	Driver SCR (math reserve)	SCR SII	Coverage Unit	CSM BoP	Unwinding	Release	CSM EoP
2022	-0,56%	12.221.000	12.200.000	14.443.000	4.958.659	(27.521)	(1.643.163)	3.287.975
2023	-0,18%	11.609.950	11.038.095	11.554.400	3.287.975	(5.767)	(1.314.531)	1.967.678
2024	0,08%	10.998.900	9.934.286	8.665.800	1.967.678	1.670	(985.898)	983.450
2025	0,19%	10.387.850	8.888.571	5.777.200	983.450	1.823	(657.265)	328.007
2026	0,19%	9.776.800	7.900.952	2.888.600	328.007	625	(328.633)	-
2027	0,30%	9.165.750	6.971.429	-	-	-	-	-
2028	0,40%	8.554.700	6.100.000	-	-	-	-	-
2029	0,52%	7.943.650	5.286.667	-	-	-	-	-
2030	0,66%	7.332.600	4.531.429	-	-	-	-	-

Conclusions

The general problem related to FVA estimation is that this could conduce to artificial suspendend profits related to the not proportional dimension of the SCR over the liabilities.

- In IFRS17 transition this could lead to under or overestimation of the CSM, with a consequent not realistic release and finally a missleading profit in income statement.

- For this reason, the application of FVA that usually is applied when data are not sufficient to apply FRA or MRA, should by taken into account with prudency.

- Sometimes could be better to use anyway a MRA with less available data, but that could be more realistic than a FVA. Both the approach, MRA and FVA, should be tried to give a final conclusion on the estimation of the CSM at transition.