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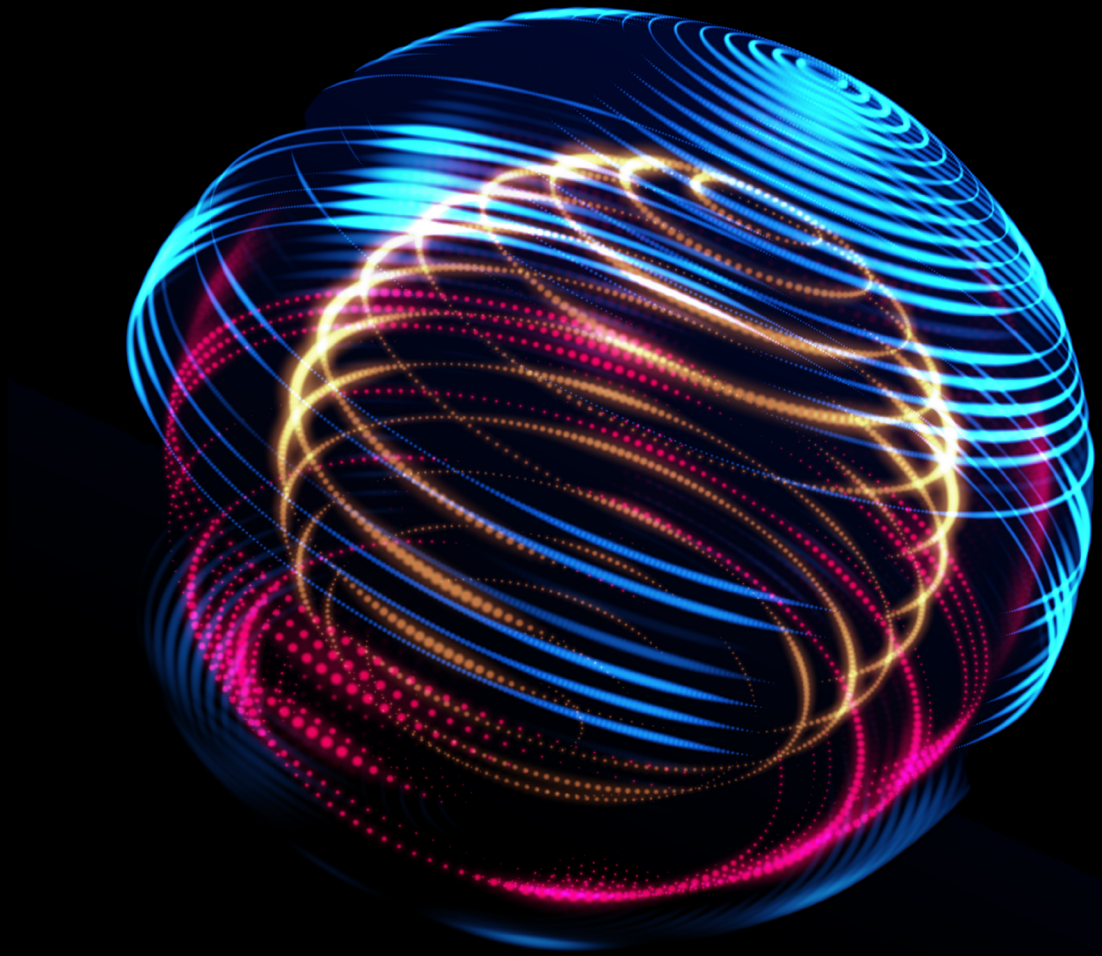

SAM Interpretation Series – Concentration Risk

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SAM Interpretation Series – Concentration Risk

Introduction

With just over 3.5 years into insurers reporting under the Solvency Assessment and Management ("SAM") framework, many insurers have changed gear from implementation to capital optimisation. This naturally results in different interpretations of the Financial Soundness Standards for Insurers ("FSIs") emerging. With social distancing being the new norm, it is apt to delve a bit deeper into concentration risk.

The Basics

Concentration risk refers to the risk of potential losses on investments over and above the systematic risks arising from the portfolio of investments when the portfolio of investments is not sufficiently diversified[1].

The FSIs require that concentration risk be calculated considering the accumulation of exposures with the same counterparty, or group of related counterparties[2].

Paragraph 10.3 of FSI 4.1 defines the asset exposures that should be excluded when assessing concentration risk. In essence, all assets other than those specifically excluded should be assessed for concentration risk. This does not necessarily mean that they would attract a capital charge, however it does mean that they should be considered in the scope of concentration risk.

Assetsxl is a key component in the calculation of concentration risk and is defined as the total assets considered in the scope of the concentration risk module (including government bonds) with no allowance for loss-given-default[3].

Similarly Ei is a key component in the calculation of concentration risk and is defined as the total exposure at default to counterparty i where counterparty i here should account for the accumulation of exposures with the same counterparty, or group of related counterparties[2]. Furthermore, Ei should also make allowance for a loss given default factor on debt instruments, cash deposits and eligible risk mitigation instruments[4].

Interpretations

We have seen two specific areas of interpretation emerge within the concentration risk module:

1. The assets to be included in the calculation of Assetsxl.
2. Treatment of collateral such as reinsurance deposits or reinsurance payable in the case where offset clauses are present in the underlying reinsurance arrangements.

References

1. Paragraph 10.1 of FSI 4.1
2. Paragraph 10.2 of FSI 4.1
3. Paragraph 10.5 of FSI 4.1
4. Paragraph 10.6 of FSI 4.1

The assets to be included in the calculation of Assetsxl

Two interpretations have been observed.

Asset Interpretation 1

Paragraph 10.3 of FSI 4.1 defines the asset exposures that should be excluded when assessing concentration risk. This could imply that to the extent they are not excluded from the scope of concentration risk by this paragraph, all assets are included in the Assetsxl estimate even if they do not attract a capital charge. This is further supported by paragraph 10.5 which makes specific reference to including government bonds in the Assetsxl estimate even though it does not attract a capital charge.

Asset Interpretation 2

Paragraph 10.1 essentially limits the scope initially to only consider the "portfolio of investments". This could imply that only assets that meet the definition of investments would be considered in the scope of concentration risk. Paragraph 10.3 should then only be applied to investment assets. This could imply that the Assetsxl estimate should exclude assets not considered in the "portfolio of investments".

Treatment of collateral

Three interpretations have been observed.

Collateral Interpretation 1

Do not allow for any collateral as the formula for concentration risk does not specifically mention that collateral should be allowed for.

Collateral Interpretation 2

Allow for collateral within the calculation of Ei only as the exposure at default should reflect any collateral available. Conversely as the Assetsxl estimate does not make a similar reference to exposure at default, do not allow for the effect of collateral in the calculation of the Assetsxl estimate. In allowing for the collateral, Ei is set equal to LGDi as per paragraph 9.23 of FSI 4.1.

Collateral Interpretation 3

Allow for collateral within the calculation of Ei (as in Collateral Interpretation 2) and in the Assetsxl estimate as the collateral in question is held as a liability on the balance sheet of the insurer. The effect of including the collateral within the concentration risk calculation would be faithfully represented by allowing for the net asset (net of collateral) exposures within the Ei and Assetsxl estimates. This would allow for a consistent treatment between Ei and Assetsxl.

Illustrative Example

To illustrate the impact of the different interpretations, we present the concentration risk results for a hypothetical insurer with the asset exposures contained in the table below. The exposures relate to four distinct counterparties that do not need to be aggregated as per paragraph 10.2 of FSI 4.1.

	Asset	LGD	CQS	Market Value
1	LGD	45%	5	150 000
2	CQS	45%	10	200 000
3	Market Value	45%	N/A	100 000
4	Premium Debtor	100%	12	50 000
	Total			**500 000**

The effect of including the collateral within the concentration risk calculation would be faithfully represented by allowing for the net asset (net of collateral) exposures within the Ei and Assetsxl estimates.

The assets to be included in the calculation of Assetsxl

Asset Interpretation 1

	Asset	Ei	CTi	gi	Rating	Conti
1	Reinsurer ABC	67 500	3.0%	10.5%	0.12	6 300
2	Cash in a SA Bank	90 000	5.0%	13.0%	0.45	29 250
3	Government					
4	Premium Debtor	50 000	1.5%	8.5%	0.56	23 800

Where
Ei - exposure at default to counterparty i.
This is estimated as Market Value * LGD.

CTi - the concentration threshold to counterparty i. This is a factor contained in the FSIs and dependent on the CQS of the counterparty. Different factors are applied for cash and short-term deposits in South African banks to those for other exposures.

XSi – $\max\left(\frac{Ei}{Assetsxl} - CTi, 0\right)$

gi - this is a factor contained in the FSIs and dependent on the CQS of the counterparty.

Conci - The undiversified concentration risk capital charge per counterparty. This is estimated as Xsi * gi * Assetsxl.

Asset Interpretation 2

	Asset	Ei	CTi	gi	Rating	Conti
1	Reinsurer ABC					
2	Cash in a SA Bank	90 000	5.0%	25.0%	0.45	33 750
3	Government					
4	Premium Debtor					

The diversified concentration risk capital charge which is estimated as the sqrt(sumsq(Conci)) is as follows:

- Asset Interpretation 1 - 38 232
- Asset Interpretation 2 - 33 750

It is worth noting that the value of Assetsxl under each interpretation is as follows:

- Asset Interpretation 1 - 500 000 (all asset exposures)
- Asset Interpretation 2 - 300 000 (only the investment portfolio exposures).

Treatment of collateral

To illustrate the impact of collateral we have assumed the insurer chooses Asset Interpretation 1 above as under Asset Interpretation 2, there are no reinsurance assets within the concentration risk calculation with which to offset the collateral.

Collateral Interpretation 1

Consistent with the result of Asset Interpretation 1.

Collateral Interpretation 2

	Asset	Ei	CTi	XSi	gi	Conti
1	Reinsurer ABC	45 000	3.0%	6.0%	0.12	3 600
2	Cash in a SA Bank	90 000	5.0%	13.0%	0.45	29 250
3	Government					
4	Premium Debtor	50 000	1.5%	8.5%	0.56	23 800

Where

Ei - exposure at default to counterparty i. This is estimated as (Market Value – Collateral) * LGD.

All other estimates in the tables above were calculated as detailed previously.

Collateral Interpretation 3

	Asset	Ei	CTi	XSi	gi	Conti
1	Reinsurer ABC	45 000	3.0%	7.0%	0.12	3 780
2	Cash in a SA	90 000	5.0%	15.0%	0.45	30 375
3	Government					
4	Premium Debtor	50 000	1.5%	9.6%	0.56	24 220

The diversified concentration risk capital charge which is estimated as the sqrt(sumsq(Conci)) is as follows:

- Concentration Interpretation 1 - 38 232
- Concentration Interpretation 2 - 37 881
- Concentration Interpretation 3 - 39 033

It is worth noting that the value of Assetsxl under each interpretation is as follows:

- Concentration Interpretation 1 - 500 000 (all asset exposures)
- Concentration Interpretation 2 - 500 000 (all asset exposures)
- Concentration Interpretation 3 - 450 000 (all asset exposures less any collateral brought into the concentration risk capital calculation).

Conclusion

As Warren Buffet put it, *diversification may preserve wealth, but concentration builds wealth.*

The pursuit of building wealth has led insurers to invest in ways that give rise to concentration risk and consequently, insurers have adopted various interpretations of the FSIs. This paper has specifically considered the interpretations that have emerged in concentration risk.

Through the illustrative example, we have observed that each interpretation has an impact on the concentration risk capital charge estimate with results being dependent on insurer specific balance sheets.

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