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ICS—Changes on the Horizon—Part 2: Liability Valuation

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This is the second in a series of articles on the insurance capital standard (ICS). In our first article, we gave an overview of the status of the ICS and highlighted some of the more contentious issues. This is the last year of field testing (FT) prior to the adoption of the "Reference ICS," also referred to as "ICS 2.0," in November 2019. This article focuses on what has been the most contentious area, namely the determination of the valuation discount rate.

THE THREE-BUCKET APPROACH

The 2019 FT continues the "three-bucket approach" of the 2018 FT. As described in our prior article, this approach seeks to recognize an "illiquidity premium" over the risk-free rate for portfolios with assets and liabilities that are considered sufficiently well matched. To qualify for the additional spread, the asset-liability portfolio must meet criteria intended to ensure that asset-liability risk is mitigated.

Liability portfolios are separated into three "buckets" of decreasing degrees of asset-liability cash-flow matching and consequent recognition of spread. The top bucket uses a spread based on the insurer's own assets, the middle bucket uses the International Association of Insurance Supervisors' (IAIS's) prescribed spreads applied to the insurer's own fixed income asset mix, and the general bucket uses prescribed spreads based on a reference portfolio of fixed income assets. The top bucket uses an "application ratio" (percentage of spread recognized in the discount rate) of 100 percent, the middle bucket 90 percent, and the general bucket 80 percent. The application ratio is applied to the net spread after a "risk correction" for expected defaults.

The criteria for the top two buckets applied in the 2018 FT were very restrictive. Very few portfolios met the criteria for the top bucket, with the typical example being portfolios of payout annuities of UK insurers that already meet the strict criteria for the Solvency II matching adjustment. Additionally, few portfolios met the criteria for the middle bucket. Therefore, the great majority of portfolios fell into the default general bucket. Unsurprisingly, this contributed to poor results at the industry level for companies with long-term business.

The 2019 FT seeks to address the "empty bucket issue" by loosening the criteria for the middle bucket and testing alternative, less restrictive criteria[1] as well. (The top bucket criteria remain unchanged). However, the changes have only slightly relaxed the criteria for the middle bucket, and we hold the view that it will not materially address the issue. At the time of writing this article,[2] the approach that will be adopted for ICS 2.0 is not clear.

The IAIS's stated rationale for tying the permissible discount rate to the degree of cash-flow matching is that the greater the cash-flow matching, the more likely the insurer is to be able to "earn the spread." If the degree of cash-flow matching is below the threshold for the middle bucket, a lower spread is justified since the ability to earn the spread is reduced. Further, lapse risk cannot be too large; the lapse risk charge may not exceed 5 percent of the liability value. The spread can be "earned," so the narrative goes, if the assets can be held to maturity. The concern, however, is that the liabilities may be "liquid" (i.e., policyholders may be able to exercise surrender options, forcing the assets to be sold at a loss before maturity).

A CHALLENGE

But are liquid liabilities or a lower degree of cash-flow matching sound reasons for a discount rate that recognizes less spread? Our contention is that they are not. Less well-matched portfolios, especially ones that include liquid liabilities, are undeniably riskier than more well-matched ones. There is less likelihood of being able to earn *whatever* discount rate is assumed for such a portfolio. Earning the spread should not be the concern. Rather, the concern should be earning the discount rate itself, including the risk-free rate. In extreme cases, there is a distinct possibility of not being able to earn anything at all (i.e., a negative return).

Our contention is that a well-designed solvency framework should address this risk via appropriate risk charges, not by adjusting the valuation discount rate. The best estimate liability (BEL) should be a "true" picture of the liability without embedded conservatism. This will allow for required capital stresses to be appropriately designed and calibrated with a focus on the risks rather than distorted by prudence in the BEL itself. The alternative—to limit the spread inherent in the valuation approach—is a blunt risk management tool that in many cases produces significant basis risk and "noise" and, therefore, increases management complexity.

We aim to present a highly stylized example that illustrates the following:

- From a prudential point of view, the company's ability to "earn the spread" should not be the primary concern. The concern should be larger: The total discount rate (i.e., risk-free plus spread), may not be earned.

- Liability liquidity is not the real issue. An inappropriate investment strategy may be very risky even in the presence of illiquid liabilities.

- The own assets (OA) approach gives a far more accurate depiction of actual economic risk. It neither understates nor overstates economic resources required to meet the company's obligations.

- The system is most transparent when there is a clear distinction between the best estimate valuation used for the economic balance sheet and the capital required to cover risk. The risk-free valuation blurs this distinction.

AN EXAMPLE

Consider a portfolio consisting of a single premium two-year non-surrenderable bullet liability backed by a 10-year zero-coupon bond rated BBB. The single premium is currency unit (CU) 1,000. The liability credits 4 percent. There are no expenses, policy charges or taxes. The bond is bought at par, and at maturity it pays the par value plus interest compounded at 6.5 percent. The example is extreme to illustrate a point.

The liability is completely illiquid; it cannot be surrendered. Despite this, the cash flow mismatch means that when the liability comes due at the end of two years, the bond will have to be sold. There is no ability to hold until maturity. If interest rates do not change, the bond will return 6.5 percent and the insurer will earn a profit of 2.5 percent, the "expected" result. But suppose there are two other possibilities, namely that BBB interest rates rise or fall by 2 percent, resulting in either a much greater or lower profit than expected. Table 1 summarizes the range of possible results.

Table 1
Ultimate Profit or Loss After All Assets and Liabilities Are Settled

Scenario	Expected	Up	Down
Profit (Loss) at Year 2	52.62	(104.23)	238.38
Rate Earned on Assets	6.50%	(1.14%)	14.89%

In the up scenario, the company has lost its bet on interest rates. Things have gone terribly wrong. Note that it is completely irrelevant whether the BBB rate increased due to spread widening or risk-free rates increasing. Whatever the spread may have been, clearly it was not earned, but more importantly, neither was the risk-free rate. In fact, total investment earnings were negative, at –1.14 percent.

When designing a solvency regime, the question is how to reflect risk in this type of situation. As noted, a component of the "solution" offered by the current version of the ICS is to reduce the spread recognized in the discount rate while at the same time imposing charges for interest rate risk and spread widening risk. If reducing the spread recognized is a good thing, then presumably no spread would give the best result. However, this can be proven not to be the case. In fact, the risk-free approach requires excessive capital when the scenarios are favorable (i.e., expected or down) and the "right" amount only when the scenario is adverse. In other words, it overstates risk and sends a false signal to stakeholders. On the other hand, a valuation using the risk-free rate plus the BBB spread gives the "right" amount in all cases.

To illustrate, we need to make an assumption about the risk-free rate and the BBB spread. We assume the one- and two-year risk-free spot rates at time zero are 3 percent, while the 10-year spot is 5 percent and the BBB spread (net of a risk correction for expected defaults) is 1.5 percent. Under the current ICS construct, capital needs to be held for interest rate risk (i.e., adverse changes in risk-free rates) and for non-default spread risk (i.e., adverse changes in spreads).[3]

Let's consider what happens under three economic scenarios assuming risk-free valuation—namely:

- **ES1:** Risk-free interest rates and spreads remain unchanged during the two-year period.
- **ES2a:** Risk-free rates increase 2 percent immediately after the policy is issued and then remain unchanged.
- **ES2b:** The BBB spread widens by 2 percent immediately after the policy is issued and then remains unchanged.

Table 2A summarizes the possible results.

Now consider the case where liability valuation is based on discounting at rates earned on OA, as shown in Table 2B.

The initial shareholder investment in Table 2B is 84 percent of that in Table 2A. In the favorable scenario (ES1), total shareholder investment and return are less than under the risk-free approach. In the unfavorable scenario, on the other hand, total shareholder investment is about the same but emerges more slowly, namely as risk is realized. Shareholder return, which is negative, is approximately the same under both approaches. Under the OA approach, the shareholder investment does not depend on changes in the spread over risk-free rates but rather on changes in the rate earned on the assets, regardless of whether that stems from changes in risk-free rates or spreads or a combination of the two. This makes intuitive sense, as it is the entire discount rate on which the liability valuation depends rather than its components.

It is important to note that the math actually shows that the problem arises whenever a discount rate is used that is less than the rate earned on the assets (i.e., whenever the application ratio is less than 100 percent). However, it is most extreme when no spread is assumed.

Table 2A
Shareholder Investments[4] and Returns Under Risk-Free Valuation

Scenario	Shareholder Investment			Shareholder Return	
	Time 0	Time 1	Total	In CUs	As a Percent
ES1	233.59	0.00	233.59	301.70	13.6%
ES2a	233.59	114.33	347.92	248.12	–18.5%
ES2b	233.59	118.93	352.53	253.12	–18.3%

Table 2B
Shareholder Investments and Returns Under the OA Approach

Scenario	Shareholder Investment			Shareholder Return	
	Time 0	Time 1	Total	In CUs	As a percent
ES1	195.58	0.00	195.58	274.46	18.5%
ES2a	195.58	157.00	352.58	257.27	–18.6%
ES2b	195.58	157.00	352.58	257.27	–18.6%

OTHER DISCOUNT RATE ISSUES—UNDERLYING RISK-FREE RATES

Risk-free curves are specified by currency and may be based on government bonds or swaps. For each currency, a "last observable term" (LOT) is specified, which is the last term at which the reference market (for swaps or government bonds) is deep and liquid. From the LOT onward, forward rates grade to a long-term forward rate (LTFR), generally at duration 60, using Smith-Wilson interpolation.

The approach to the risk-free rate, including the LTFR, is generally seen as reasonable.

OTHER DISCOUNT RATE ISSUES—ULTIMATE SPREAD

Under both the middle and general buckets, the spread grades to 15 basis points over the same period as the risk-free rate grades to the LTFR. This is controversial. Many believe that a long-term spread concept should be introduced. They point out that grading to 15 basis points in effect assumes the bond market ceases to exist after the LOT or perhaps that there is no guarantee of "liability liquidity" after the LOT. In our view, both assumptions are problematic at best. Table 3 shows historical spreads on USD bonds with a maturity greater than 10 years from 1919 to 2014.

Table 3
Historical Credit Spreads (in Basis Points)[5]

	AAA	AA	A	BBB
Mean	82	106	140	203
Standard Deviation	46	56	73	99
Minimum	14	23	32	51
25th Percentile	44	56	79	126
Maximum	424	347	478	802

OTHER DISCOUNT RATE ISSUES—RECOGNITION OF SPREAD ON EQUITIES

The ICS recognizes no spread on equities. Some believe that recognition of a spread on equities is appropriate when equities back long-term liabilities. Equities can play an important role in backing liability exposures beyond the investable horizon and are a stable component of insurer asset portfolios over the long term; it is our view that the ICS should recognize the role these assets can play in insurers' asset-liability management. The current approach creates disincentives for investment in equities. This issue will be discussed in more detail in a subsequent article in this series.

CONCLUSION

We have endeavored to demonstrate that an OA approach, where liability valuation is linked to the underlying assets, is more useful within a solvency regime than an approach where liability valuation is disconnected from the supporting assets because it leads to better risk management and more realistic, yet sound, quantification of liabilities. ■

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ENDNOTES

1 The technical specifications for the 2018 and 2019 FT can be found on the IAIS website.

2 September 2019.

3 Other than the risk correction for expected default, credit risk is ignored as it is not relevant to this discussion since it is the same under all scenarios considered.

4 Defined as the difference between the policy liability plus required capital (RC) and existing assets. At time zero this is RC less the premium. At time 1, it is RC less the market value of the bond purchased with the premium. RC is calculated so as to be sufficient such that assets will meet liabilities under a 2 percent shock to interest rates and credit spreads. Spreadsheets supporting all calculations are available from the authors.

5 Hennink, Erik. (2018). Long-Term Expected Credit Spreads and Excess Returns: Portfolio Modelling, Performance Attribution and Governance. 10.1007/978-3-319-90245-6_8.