Exam 6 International Study Note – Solvency

Ralph Blanchard, FCAS

Abstract

The syllabus for Part 6-I includes papers from a variety of organizations produced over the relatively recent past. Despite our best efforts in searching for worthwhile material, some of those papers are dated in certain areas, contain information more focused towards life and annuity contracts rather than property/casualty contracts, or were not as clear as we would have liked. This study note attempts to fill those gaps in the other syllabus materials.

The study note is organized by Syllabus reading, including page numbers (when relevant) where a need to supplement, update or correct that material was identified.

1. OVERALL

The Broad definition of payments to policyholders

Several of the readings in the syllabus reference payments to policyholders. This should be interpreted broadly to include both payments to and on behalf of policyholders. For example, the claimants that might be paid under policies covering liability to third parties (such as mandated motor coverage in many countries) are not the policyholders themselves but people suing the policyholders.

Total Balance Sheet approach

> This concept is alluded to by several of the readings, but not always fully defined. The basic concept is that the amount of assets needed to cover the risks of an insurer is a function of the risks on both sides of the balance sheet and how those assets and liabilities are measured. Under this concept the capital requirement cannot be viewed in isolation of the accounting. A change in the accounting system should result in a change to the required capital requirement. For example, if the only assets were cash (i.e., completely risk-free) and the only risk was misestimation of liabilities, if the solvency requirement was to cover the risk of liabilities reaching 100, then a liability

valuation of 70 under a conservative accounting system would require a capital requirement of 30. If those same liabilities were valued at 60 under a less conservative

system, then the capital requirement would be 40. Under such an approach the degree of risk margin, for example, is not a solvency concern as long as the capital requirement reacts to that risk margin appropriately[1].

As another example of the above concept, assume a balance sheet with risk in both assets and labilities. If the assets were valued conservatively under a given accounting system, then the capital requirement would be lower than it would if the assets were valued aggressively. The former approach (conservative valuation of assets) might result in some cushion for risk on the asset side of the balance sheet, offsetting the need for the amount of capital to be reported. Aggressive valuation of assets would lead to a higher requirement for reported capital.

Hedging

Hedging of financial market risks is fairly common for certain types of life/annuity contracts but is much less used for P&C contracts. One reason for this is that the payout for most P&C contracts is not a function of interest rates or equity markets, so there is less need to hedge those types of risks.

2. SPECIFIC READINGS

Reading: IAIS Core Curriculum 5 - Solvency - Principles and structures
(We acknowledge that there are a number of typos in the early pages of this reading. Please excuse these – we do not believe they are material to the usefulness of the material.)

[1] There may be other reasons to set a certain accounting approach to risk margins. Some accounting systems may desire to replicate the value a market would place on the liabilities if transferable, and market values generally reflect the risks of the items being transferred via risk margins. Some would want liability values to be set at a certain confidence level. Others might not want to include risk margins in liability valuations at all, due to estimation uncertainty, relying entirely on the capital requirement to cover the lack of margins.

On page 9 of this reading (Section 1.1.3) there is a discussion of various perspectives regarding solvency. The middle bullets of this list (Inforce, "Break-up or winding-up") are generally focused on life/annuity products and/or may be focused on certain jurisdictions such that they are not totally relevant to many property/casualty (P&C) practitioners. Clarifying remarks for those bullets, as well as the "merger" bullet, are as follows:

- Inforce – This bullet point is discussing the solvency option of "runoff", whereby an insurer stops writing new business as it runs off existing liabilities and obligations. While this may be limited to "in force" policies for a life insurance or annuity writer, the runoff obligations of a P&C insurer would include claim liabilities for in-force and expired policies. For certain products and jurisdictions, a majority of these runoff liabilities can come from expired policies. So, where this bullet point mentions "Inforce" please interpret that to mean "Runoff" including claim liabilities. As mentioned in the source material, such a runoff can be voluntary or can be a forced runoff at the direction of the supervisor.
- Break-up or winding-up – A major component of this bullet point, and how it differs from the previous "runoff" bullet point, is via the transfer of existing obligations to another insurer. The candidate should be aware that this is much more common for life/annuity products than for P&C products and may actually be prohibited in some jurisdictions absent policyholder consent. While existing obligations may not be subject to transfer, a supervisor may be able to salvage value from a P&C insurer windup by the sale of customer lists or renewal rights from the failed insurer, or potentially even some limited product lines, especially if the product line at issue has been profitable in the past.
- Merger – In some jurisdictions a supervisor may be able to force a merger of the failed insurer with a solvent insurer, but this is not always possible. The availability of this option is dependent on the local supervisor's authority. Not all jurisdictions give the supervisor such authority.

Page 12 (section 1.4) includes a list of risks faced by an insurer. That list in the text is "underwriting, credit, market, operational, and liquidity risk". The reader should be aware that underwriting risk here is meant to include both that related to premiums and that related to reserves. Premium risk includes the risks of mispricing (i.e., setting prices that do not reflect the expected costs), mis-underwriting (not selecting the types of risks anticipated in the pricing), and event risk (e.g., unusually bad whether under the policy period for property coverage). Event risk is higher when the exposures are

concentrated in one particular area (such as one flood plain, one industry facing higher levels of lawsuits, etc.). Reserving risk is the risk that actual losses will be different from the reserve estimates. Reserving risk typically (but not always) remains until claims are closed and future claim reports (on prior events) are highly unlikely.

With regard to liquidity risk, much of the current thinking in the context of solvency regulation is that liquidity risk is not addressed via a capital requirement, but via more prudent management of potential cash sources versus cash demands. In other words, it is largely avoidable or subject to substantial mitigation via the investment strategy of an insurer.

Liquidity risk can be extremely high for a bank, and can also be material for a life insurer, but generally is much smaller for P&C insurers. The reason for this difference is the lack of a financial call feature on most P&C liabilities. Rather than being instantly callable on demand (as in a bank's checking account deposits), P&C claim liabilities are only paid after a covered event, and then only after an adjustment, negotiation, and settlement process. Ways of addressing liquidity risk are currently being investigated by the IAIS (as of early 2021).

<u>"Matching" relative to P&C liabilities</u>

Page 16 of the source material lists "Matching of assets and liabilities" as one of the essential elements of a solvency regime. The candidate should be aware that this is not exactly the case for most P&C products but was probably written with life/annuity products in mind. For many (most?) life insurance and annuity products the cash flows are highly predictable relative[2] to P&C products, and in some cases such products have financial call provisions[3] or interest rate sensitivities. As a result, matching of asset flows closely to life/annuity liability flows can be very achievable and may be absolutely necessary for solvency purposes. But the cash flows for many P&C products are uncertain both as to amount and timing.

It is generally possible to match asset flows to expected P&C liability flows, but actual liability flows are almost certain to be different from those expectations, in some cases materially so. As those expected flows are subject to re-

[2] Both life insurance and annuity products have contractually defined (stated) payouts that require no negotiations. The payouts are also based on the subject individuals death or survival, with mortality trends generally very stable over time – at least from the perspective of P&C claim trends.

[3] A financial call option in the insurance context allows the policyholder/claimant to demand immediate cash payment on the policy. In the context of life/annuity policies this relates to surrender provisions.

estimation every reporting period (at a minimum due to actual to expected payout differences during the period), any attempt to match asset flows to those new expectations would require rebalancing the asset portfolio every reporting period, which can result in material transaction costs every reporting period. There also needs to be consideration of what happens when the liability flows.

for a period are much greater than expectations. A strict "matching" approach could require untimely liquidation of assets. Therefore, the focus for P&C companies are typically on asset/liability management, not asset/liability matching. For example, the asset portfolio may be managed such that the duration of such assets does not differ materially from the duration of the expected liability flows, as well as maintaining sufficient liquidity such that aberrations in cash flow demands from period to period do not require untimely asset sales. In short – asset/liability management is the approach taken by most P&C companies and not asset/liability matching.

There is a related issue in certain other readings in the syllabus (e.g., paragraph 6.103 of *A Global Framework for Solvency Assessment)* regarding "replicating portfolios". Replicating portfolios are portfolios of assets that mirror the reaction of the liabilities to certain stresses, such as an interest rate increase. Such portfolios are generally not relevant to P&C liabilities, where the principal risks are non-financial market risks such as weather, accidents, and court decisions. Instead, it is more common to hear mention of "reference portfolios" regarding P&C asset/liability management. Reference portfolios are asset portfolios with the same expected cash flows as the liabilities, but whose change in value due to an event does not necessarily mirror the change in liability value due to that event.

<u>Solvency assessment vis-à-vis balance sheet</u>

Section 2.2 (page 17) states that "Solvency is fundamentally an assessment of an insurer's current and, perhaps, prospective, balance sheet". For P&C insurers this is a little misleading in that many of the risks (such as weather for property insurers) arise from the income statement results and may never show up on the balance sheet other than reduced levels of assets or equity after the event. This is alluded to later in the first paragraph of this section in the discussion of "many exposures … do not show up on the balance sheet".

<u>Catastrophe risk</u>

That same section mentions catastrophe risks as a source of solvency concern. The candidate should be aware that this is increasingly being addressed using catastrophe models (for both internal risk management and statutory minimum capital requirements). Third-party venders are already well-established for the hazards of

earthquake and tropical storms (hurricanes, cyclones, typhoons). Models have also been created for other hazards such as floods, terrorism, and hail.