

Hong Kong RBC – First Quantitative Impact Study results and observations

Latest update

Insurance companies in Hong Kong provided their First Quantitative Impact Study (QIS 1) submissions in December 2017, based on the technical specifications released by the Insurance Authority (IA) on 28 July 2017.

In respect of the life insurance sector, 16 composite and 30 long-term insurance companies filed QIS 1 submissions. The Industry Focus Group (IFG) for Pillar 1 – Life Insurance has subsequently released the summary of the preliminary QIS 1 results, which excluded some late submissions and incorrect data.

In this e-Alert, we analyse these QIS 1 results and provide commentary on them.

Step-by-step Reconciliation of Liabilities

SUMMARY OF QIS 1 RESULTS

The IA required insurance companies to perform the following step-by-step analysis of movement as of 31 December 2016 in the QIS 1 results submissions:

FIGURE 1: LIABILITY RECONCILIATION STEPS

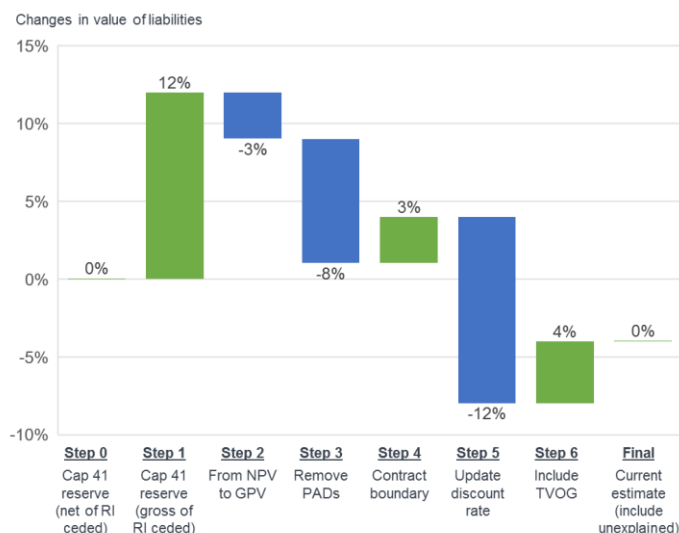
Run step	Step setup	Description
0	Cap 41 basis (Net of reinsurance ceded)	Begin with the valuation result as at 31 Dec 2016
1	Cap 41 basis (Gross of reinsurance ceded)	Remove impact of reinsurance
2	Gross Premium Valuation (GPV) basis	Move from a Net Premium Valuation (NPV) basis to a GPV basis
3	Best estimate assumptions	Remove the provisions for adverse deviation under the assumptions
4	Contract boundary	Switch to the contract boundary specified by HKRBC, which is the same as the one adopted under IFRS 17
5	Discount rate – risk-free with adjustment	Update the discount rate to use a risk-free basis with liquidity premium adjustment, basing on the IA prescribed yield curves
6	Include cost of options and guarantees	Reflect the cost of options and guarantees
End	Base Case Current Estimate	Allow for unexplained items

Key points of focus:

- Observations on industry-wide step-by-step value of liabilities movement from existing regulation towards the HKRBC basis.
- Prescribed Capital Requirement (PCR) distribution by risk type.
- Latest plan for next study.

Based on the QIS 1 submissions, the movement in value of liabilities for each of the steps, at an industry level, is shown in Figure 2.

FIGURE 2: INDUSTRY RESULTS



The last step in the movement analysis shows the value of liabilities under the draft HKRBC basis.

COMMENTARY ON KEY OBSERVATIONS

The net impact on the value of liabilities when moving from the current regulatory basis (CAP 41 basis) to the draft HKRBC basis is a reduction of 4%. This translates to a total increase of 19% being offset by a larger total decrease of 23%. If the reinsurance impact is not included, the net impact on the value of liabilities is a reduction of 16%.

The increase in value of liabilities is due to changing the valuation from a net-of-reinsurance basis to a gross-of-reinsurance basis (12% increase), the inclusion of the valuation of the time value of options and guarantees (TVOG) (4% increase) and the application of contract boundaries (3% increase).

The decrease in reserves is attributed to the removal of provision for adverse deviations (PADs) (8% decrease), the impact from using a lower discount rate (12% decrease), and the change in approach from a NPV basis to a GPV basis (3% decrease).

It should be noted that the value of liabilities is considered before the inclusion of the margin over current estimate (MOCE), which is also part of the technical provisions intended to reflect the uncertainty in the current estimate of liabilities. After including MOCE, the value of liabilities under the draft HKRBC basis will increase and be higher than that under the CAP 41 basis.

Factors leading to increase in value of liabilities

Under the existing CAP 41 basis, companies generally value their liabilities on a net-of-reinsurance basis for business with coinsurance and guaranteed premium yearly renewable plan reinsurance arrangements in place, resulting in a smaller value of liabilities. Removing such allowance increases the value of liabilities by 12% as observed from the QIS 1 results. However, at a total balance sheet level, this impact can be offset by the increase in reinsurance asset on the asset side. The reinsurance asset reflects the probability-weighted average of the present values of the future cashflows from the reinsurance arrangements.

Currently, companies are only required to calculate the cost of investment guarantee for so-called "Class G" business, defined as retirement scheme contracts with guaranteed capital returns. Under the draft HKRBC basis, the TVOG for all insurance contracts must be explicitly calculated, which increases the value of liabilities by 4%. In valuing the TVOG, various approaches have been adopted by companies in determining the time value of options and guarantees, ranging from a simple factor-based approach to a more sophisticated stochastic approach.

The application of HKRBC contract boundaries (the same as IFRS 17 contract boundaries) effectively shortens the projection period for products for which the insurance companies have the unilateral right to re-price or cancel. A shorter projection period for typically profitable products such as yearly renewable term

(YRT) products leads to higher reserves under this step, as profits from future renewal periods are no longer included, compared to the previous step in the movement analysis.

Factors leading to reduction in the value of liabilities

Based on QIS 1 requirements, the value of liabilities is determined on a best estimate basis, without any PADs within the actuarial assumptions. Removing the PADs from reserving assumptions used in the NPV basis leads to a reduction of 8% in the value of liabilities.

In QIS 1, companies were required to value their liabilities using the prescribed yield curves specified by the IA, which were derived from the risk-free rates plus liquidity adjustments of 50 bps. The liquidity adjustment applies at all durations, including the ultimate forward rate and all products. When updating the discount rate from the CAP 41 valuation interest rates to the prescribed yield curve, the value of liabilities reduced by 12%, which is mainly attributable to the more conservative CAP 41 valuation interest rates compared to the prescribed yield curve under QIS 1.

There was also a reduction in liabilities resulting from the change in reserving approach from NPV to GPV. This net impact resulted for various reasons, including lower present value of outgo for policies in premium deficiency position and inclusion of surrender outgo under GPV basis (which is not covered under the NPV basis), and is partly offset by the provision for non-guaranteed bonuses and dividends currently not required under the CAP 41 basis.

A reduction in value of liabilities is also observed for certain lines of business such as universal life and unit-linked, especially for products with minimal or no benefit from actuarial funding. This is because the non-unit reserves based on the present value of future charges less future expenses are generally negative, and negative reserves are allowed in the draft HKRBC framework.

Prescribed Capital Requirement (PCR)

SUMMARY OF QIS 1 RESULTS

Under HKRBC QIS 1, the PCR for each of the insurance and market risks is determined using a combination of a stress-based approach and a factor-based approach. Under the stress-based approach, the PCR is defined as: $\text{Max}(0, \text{NAV}(\text{Base case}) - \text{NAV}(\text{Stressed}))$, where NAV is the net asset value. Under the factor-based approach, prescribed shock levels are applied to the underlying risk exposure to estimate the corresponding risk charges.

In QIS 1, the IA did not prescribe any correlation matrices. It is understood that the correlation matrices among risk modules and sub-modules (and consequently the determination of deferred tax asset) will be considered by the IA at a later stage (likely to be in the next QIS 2 study).

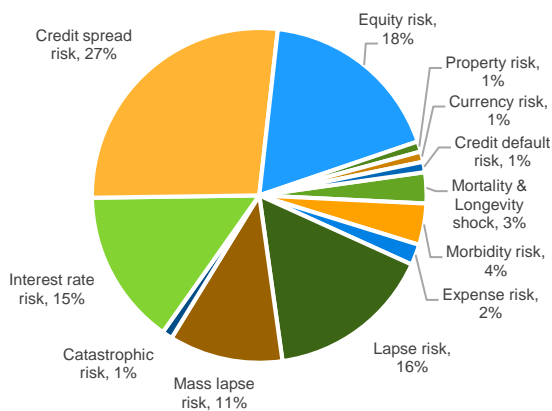
Preliminary results of the PCR as a percentage of available capital, at an industry level, are shown in Figure 3.

FIGURE 3: QIS 1 PCR IMPACT ON AVAILABLE CAPITAL AT AN INDUSTRY LEVEL

Insurance Risks	Impact on Available Capital
Mortality and longevity risks	(3%)
Morbidity risk	(4%)
Expense risk	(2%)
Lapse risk	(14%)
Mass lapse risk	(6%)
Catastrophic risk	(1%)
Market Risks	Impact on Available Capital
Interest rate upward shock	(2%)
Interest rate downward shock	(6%)
Credit spread shock	(23%)
Equity shock	(15%)
Property shock	(1%)
Currency shock	Insignificant
Credit default shock	Insignificant

Preliminary observations on the split of the PCR as a percentage of total PCR, at an industry level, are shown in Figure 4.

FIGURE 4: QIS 1 PCR DISTRIBUTION AT AN INDUSTRY LEVEL



Preliminary observations on the asset portfolio mix and the distribution of rating of the fixed income assets, at an industry level, are shown in Figure 5 and Figure 6, respectively.

FIGURE 5: ASSET PORTFOLIO AT AN INDUSTRY LEVEL

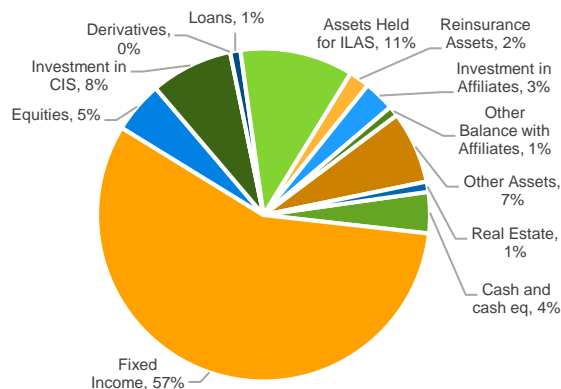


FIGURE 6: DISTRIBUTION OF RATING OF FIXED INCOME ASSETS AT AN INDUSTRY LEVEL

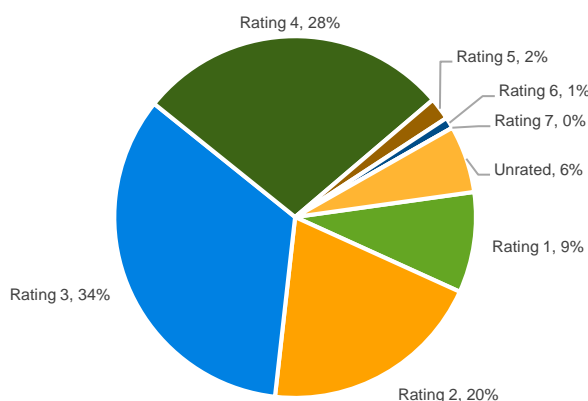


FIGURE 7: CREDIT RATING GROUPING OF FIXED INCOME ASSET

Rating Band	1	2	3	4	5	6	7
S&P	AAA	AA+ to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	Below B-
Moody's	Aaa	Aa1 to Aa3	A1 to A3	Baa1 to Baa3	Ba1 to Ba3	B1 to B3	Below Caa

COMMENTARY ON RESULTS

The total PCR before any diversification impact benefit amounted to 77% of available capital. This implies that the solvency ratio at an industry level would be around 130%. There is a material increase in the solvency capital requirement compared to the current CAP 41 basis. The total PCR after diversification is expected to reduce significantly.

The total PCR is mainly composed of market risks, including credit spread risk (27%), equity risk (18%) and interest rate risk (15%), and insurance risks, including lapse risk (16%) and mass lapse risk (11%).

It is not surprising that the largest market risk is credit spread risk when looking at the current asset mix of the industry, with 57% in fixed income assets and a credit rating of 3 (A+ to A- in S&P's credit rating scale). In determining the credit spread risk

PCR, the assets are required to be revalued by adding the prescribed shock level corresponding to an individual bond's credit rating band and term to maturity to the discount rates used. The shock level on credit spread ranges from 125 bps to 165 bps for bonds with a credit rating of 3.

The material equity risk PCR is mainly due to the level of shock considered (i.e., 38% for developed market listed equities, 48% for other equities including collective investment schemes which the full or partial look-through approach cannot be applied, and 20% for strategic investments). This occurs despite the total asset mix for equities, derivatives, and investment in affiliates only making up about 10% of the total

asset portfolio mix. It is worth noting that the shock level is not out of line with similar frameworks like Solvency II and Singapore RBC 2.

The significant interest rate risk PCR is due in part to the prevalence of limited pay whole life products in Hong Kong, which inherently have much longer liability durations than the asset durations.

On the insurance risk aspect, we can see that companies are not severely impacted by risks other than lapse and mass lapse. We expect this will focus companies even more on managing lapse experience in the future.

Road beyond QIS 1

The IFG has listed some key items they will focus on for QIS 2, including:

- Methodology and approach for deriving the base yield curve, adjustments and risk margins
- Calibration on insurance and market risk charges
- Correlation matrices among risk modules and sub-modules for diversification benefits
- More guidance on management actions and TVOG

There are some important areas listed below that are not specifically tested under QIS 1 that could be covered in QIS 2, including:

- MOCE, reflecting the uncertainty in the current estimate of liabilities
- Tiering of capital assets based on quality
- Operational risk charges

QIS 2 is targeted to be launched in July / August 2018 and submissions are expected within three months. If you would like to discuss any aspects of this eAlert or the road towards HKRBC full implementation in general, please contact any one of our consultants.



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