ACTUARIAL SOCIETY of HONG KONG 香港精算學會

Hong Kong Actuaries

Actuarial Society of Hong Kong's Newsletter

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VOLUME
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Nov 2017

Feature Articles:

Get Ready for

IFRS 17 Insurance Contract

Call for Articles or Views for the next issue of Newsletter

While all articles are welcome, we would especially like to receive articles for the Feature Articles and Knowledge Sharing sections. If you have written any inspiring articles or have read any interesting articles from other actuarial organisation(s), please feel free to let us know. We will try to reprint the article(s) in our newsletter to share with our members. For the above issues, please e-mail your articles or views to Rachel Chu by email at rachelchu@bluecross.com.hk or ASHK Office by email at info@actuaries.org.hk

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Editorial

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Dear Readers,

Time flies, 2017 newsletter has come to the third issue. In this issue, we would like to share with you with another hot topic, IFRS 17.

In 18 May 2017, the International Accounting Standards Board (IASB) issued IFRS 17 Insurance Contract, replacing IFRS 4. IFRS 17 requires all insurance contracts to be accounted for in a consistent manner. It will fundamentally change the accounting of the insurers; requiring new models, new systems and more resources. It should be one of the key tasks for most of the insurance companies and thus it will be beneficial for us to get familiar with this new framework.

We are truly thankful to Mr. Steve Cheung of Ernst & Young, Mr. Dion Heijnen of Willis Towers Watson and Mr. Lie Jen Houng of Deloitte for their generous sharing in our Feature Articles section. Their invaluable insights on IFRS 17 are surely useful to help us better understand the new standard.

Besides, we are glad to have Mr. John Eng on the sharing of his view on Hong Kong Mandatory Provident Fund Annuitisation for Retirees.

Furthermore, we will be glad to receive your viewpoints on any publication matters. You can also initiate discussion on any industry issues that you would like to focus on. Please do not hesitate to contact me at rachelchu@bluecross.com.hk or ASHK Office at info@actuaries.org.hk regarding any interesting ideas.

We do hope that you will enjoy this issue. Happy Reading!

Best regards,
Rachel Chu
Editor

Council – Kevin Lee and Simon Lam

Insurance Talents and "We Protect 保 – 以人為本"

In the 2014-15 Budget, Financial Services and the Treasury Bureau (FSTB) conducted a study on the training of professionals and skilled personnels in various sectors of the financial services industry. Through consultation with the financial services industry on the issue of talent training, it is noted that manpower shortage in middle- and back-offices is particularly acute in the insurance sector.

In this connection, FSTB has launched a three-year Pilot Programme to Enhance Talent Training for the Insurance Sector (Pilot Programme) from 2016 to 2019 targeting at the public, students and existing in-service practitioners, with a view to attracting new blood and enhancing the professional competency and knowledge of the sector.

Recently ASHK Immediate Past President, Ms. Ka-Man Wong has been portrayed together with other insurance professionals in the **"We Protect 保 – 以人為本"** publicity campaign of the Pilot Programme through various media channels - promotional posters in MTR and streets as well as interview videos on youtube. Ms. Wong's video on the introduction of actuary's role in insurance industry can be viewed at: https://www.youtube.com/watch?v=gkLSOuAIud4#action=share.

Press Release on Social Responsibility and Contribution of Insurance Industry and Actuaries

To increase the media presence, Council issued a press release dated 17 August 2017 on **"Social Responsibility and Contribution of Insurance Industry and Actuaries"** (in Chinese) through a wide range of online news posting e.g. ET Net.

A copy of the press release can be downloaded from ASHK website at www.actuaries.org.hk under the "Publications" section (Publications > Industry News & Press Release > Year 2017).

2018 Asian Actuarial Conference Organising Committee – Billy Wong

Stay Tuned for Asian Actuarial Conference, 16 - 19 September 2018, Hong Kong

The ASHK will host the 2018 Asian Actuarial Conference at Kerry Hotel, Kowloon on 16-19 September 2018 with the theme of **"Redefining the New Insurance World".** The following committees have been formed. More information will be available soon! Stay tuned!

Organising Committee:	Operating Committees:		
	Programme Committee:	**Sponsorship & Marketing Committee:**	**Finance & Logistics Committee:**
Mr. Billy Wong (Chairman) Ms. Candy Chan Prof. Wai-Sum Chan Mr. Steve Cheung Ms. Mary Kwan Mr. Simon Lam Mr. Gary Lee Mr. Kelvin Lee Ms. Orchis Li Ms. Florence Li Mr. Wilbur Lo Mr. Pang King Yin	Ms. Orchis Li (Chairman) Prof. Wai-Sum Chan Mr. Steve Cheung	Mr. Wilbur Lo (Chairman) Ms. Florence Li	Mr. Gary Lee (Chairman) Ms. Candy Chan Ms. Mary Kwan Mr. Kelvin Lee Mr. Pang King Yin

For sponsorship opportunities, please contact Ms. Pat Kum of ASHK Office at email: patkum@actuaries.org.hk.

Membership & Communications Committee – Kenneth Dai and Mary Kwan

Revised Definition of Retired Members and Poll Results of the ASHK Extraordinary General Meeting (EGM), 27 September 2017

Reference is made to the EGM Notice dated 4 September 2017 for ratification of the change of retirement definition in the CPD By-Law and mailed to all ASHK members with the stipulated 21 days' notice. The EGM was convened on 27 September 2017 and ASHK's Honourary Auditor, Ernst & Young, acted as the scrutineer for the vote counting at the meeting. The resolutions as set out in the EGM Notice were approved unanimously:

Voting Issues		For	Against
1.	Resolution 1 (Ordinary Resolution) – *"That, all previous acts done or documents executed by any Council members of the ASHK to give effect to or in connection with the change of retirement definition are hereby approved, confirmed and ratified."*	100.00%	0.00%
	All Voting Members present voted in favour of this resolution so the resolution was passed unanimously as an ordinary resolution.		
2.	Resolution 2 (Special Resolution) – *"That, the proposed amendment to the CPD By-Law as detailed below is hereby approved, confirmed and ratified.* *Original Provision:* *"For purposes of this By-Law a member is considered retired in a calendar year if the member is aged over 65 and no longer working in full-time employment during that year."* *To be amended as:* *"The criteria for a "retired member" are set out on the ASHK website under the "Membership" section."*	100.00%	0.00%
	All Voting Members present voted in favour of this resolution so the resolution was passed unanimously as a special resolution.		

The **criteria for a "retired member"** are set out on the ASHK website at www.actuaries.org.hk under the "Membership" section (Membership > Current Subscription > Discounted Rate for Retired Members).

The ASHK wishes to thank members for taking the time to attend the meeting.

Professional Development Committee and Curriculum Taskforce – Mark O' Reilly and Nora Li

Curriculum of Local Actuarial Examination

Since 2016, a Curriculum Taskforce has been formed to develop a syllabus and a set of study aids for the Hong Kong Practical Education Module. The ASHK is now pleased to make available to its members the curriculum (June 2017 edition) on the ASHK website at www.actuaries.org.hk under the "Education & Career" section (Education & Career > Education & Examination > Local Actuarial Examination).

The curriculum covers areas of regulation and industry practice that affect the working environment of most actuaries in Hong Kong. All ASHK members working in insurance, pensions and other investment sectors should be aware of the areas described here, and be familiar with the content which relates to their field. We encourage members to keep themselves abreast of the content.

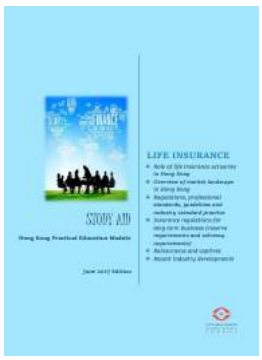
Professional Development Committee and Curriculum Taskforce – Mark O' Reilly and Nora Li

Curriculum of Local Actuarial Examination (Cont'd)

It is the ASHK's intention to introduce an examination next year, passing which will become a required step for acceptance as a Fellow of the ASHK. This examination is viewed by Council as a necessary step on our path towards statutory recognition. In view of the examination and its importance to the ASHK's agenda, the curriculum materials have been set out in the following forms:

- A syllabus which covers the areas for examination;

- A set of study aids for each major field [(i) Generic; (ii) Life Insurance; (iii) Pension; (iv) General Insurance; and (v) Investment] in which actuaries work.



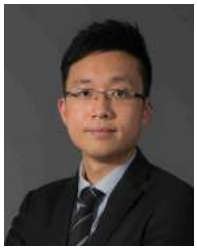
Thanks heaps to the enthusiastic support and hard work from Curriculum Taskforce members in developing the curriculum. We welcome comments on these materials. Or if you are interested in volunteering to assist the ASHK in preparing the examinations, please contact Mr. Mark O'Reilly, Chairperson of ASHK Professional Development Committee at markoreilly@deloitte.com.hk, Ms. Nora Li, Leader of ASHK Curriculum Taskforce at nli@scor.com.hk or ASHK Office at info@actuaries.org.hk.

Strategy and Statutory Path Committee – Dicky Lam and Ka-Man Wong

Throughout the year, the Council and Strategy and Statutory Path Committee maintained regular dialogue with Financial Services and the Treasury Bureau and Insurance Authority as well as the Hong Kong Federation of Insurers to exchange updates and views on various issues such as Risk-Based Capital Quantitative Impact Study & future development, statutory recognition of the ASHK and progress of local actuarial professional examination.

The regulators and industry body welcome ASHK's initiatives to enhance the professionalism of actuaries and to raise the public awareness of the professional profile of actuaries.

IFRS 17: Variable Fee Approach and its Implications for Hong Kong Life Insurers



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(Disclaimer: The views reflected in this article are the views of the author and do not necessarily reflect the views of the global EY organisation or its member firms.)

Remark: The reference quoted by [ ] in this article represents the text or the extraction from the IFRS 17 Standard and Basis for conclusions.

Introduction

After a very long journey, the International Accounting Standards Board (IASB or the Board) issued IFRS 17 *Insurance Contracts* (IFRS 17). IFRS 17 replaces IFRS 4 *Insurance Contracts* that was issued in 2004. The overall objective of IFRS 17 is to provide a more useful and consistent accounting model for insurance contracts among entities issuing insurance contracts globally. Once issued, Hong Kong's version of IFRS 17, HKFRS 17, will likely be mandatorily effective in Hong Kong for annual reporting periods beginning on or after 1 January 2021. Although the formal adoption has not yet taken place, it is generally expected that the Hong Kong Institute of Certified Public Accountants (HKICPA) will issue HKFRS 17 without differences in content or effective date compared to IFRS 17 (similar to other recently issued IFRSs).

General accounting model (GM) and variable fee approach (VFA)

The IASB introduces a general accounting model (previously called building block approach) for the insurance contract liability measurement[1]. In order to cater the unique features of insurance contracts with direct participation features, IFRS 17 provides for a specific approach called the variable fee approach. Insurance contracts with direct participation features (also referred to as 'direct participating contracts') are insurance contracts that are substantially investment-related service contracts under which an entity promises an investment return based on underlying items [B101]. They may be regarded as creating an obligation to pay policyholders an amount that is equal to the fair value of the underlying items, less a variable fee for service.

[1] Please refer to "EY Insurance Account Alert (May 2017)" for the IFRS 17 overview. (http://www.ey.com/Publication/vwLUAssets/Insurance_Accounting_Alert_May_2017/$FILE/ey-insurance-accounting-alert-may-2017.pdf)

The VFA is a modification of the GM in order to reflect the nature and economics of these contracts with direct participation features. The table below summarises the key differences between the GM and the VFA:

Measurement model	Changes in fulfilment cash flows due to the changes in financial variables	Insurance finance income or expenses
GM	All changes in discount rates and other financial variables are reported in the statement of comprehensive income (profit or loss; or other comprehensive income)	The interest expense on the contractual service margin is explicitly accreted using rates at the initial recognition of the contracts
VFA	The contractual service margin is adjusted to reflect the changes in the variable fee, which includes some changes in discount rates and other financial variables	The interest expenses are implicit in the changes in the insurer's variable fee (its share of the underlying items and other cash flows needed to fulfil the contracts)

Variable fee approach eligibility criteria

The IASB made it clear that only insurance contracts with direct participation features are eligible for the VFA, but significant judgement is required to assess the VFA eligibility.

[BC238] *Insurance contract with direct participation features are insurance contracts for which, on inception:*

(a) the contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items; (VFA criteria I)
(b) the entity expects to pay to the policyholder an amount equal to a substantial share of the fair value returns from the underlying items; (VFA criteria II) *and*
(c) *the entity expects a substantial proportion of any change in the amounts to be paid to the policyholder to vary with the change in fair value of the underlying items.* (VFA criteria III)

Key considerations for Hong Kong life insurers

It is clear that significant judgements are required for the VFA eligibility assessment. Crucial questions include how to define clearly identified pool of underlying item and how to interpret the term "substantial". We expect these to be part of the key issues to be discussed by the Transition Resource Group (TRG). Before market consensus has been formed, below are the key evolving questions we observed from the market after the Standard is issued.

(1) What is clearly identified pool of asset?

In order to eligible for the VFA, IFRS 17 requires that the contractual terms specify that the policyholder participates in a share of a clearly identified pool of underlying items [B101(a)], [BC238(a)]. The pool of underlying items referred to in paragraph B101(a) can comprise any items, for example a reference portfolio of assets, the net assets of the entity, or a specified subset of the net assets of the entity, as long as they are clearly identified by the contract. An entity need not hold the identified pool of underlying items because the measurement of insurance contracts should not depend on what assets the entity holds [B106], [BC246]. The Board also decided that the underlying items do not need to be a portfolio of financial assets. They can comprise items such as the net assets of the entity or a subsidiary within the group that is the reporting entity [BC245].

(2) What is the definition of "contract" and "contractual terms" when defining the "clearly identified pool of asset"?

A contract is an agreement between two or more parties that creates enforceable rights and obligations. Enforceability of the rights and obligations in a contract is a matter of law. Contracts can be written, oral or implied by an entity's customary business practices. Contractual terms include all terms in a contract, explicit or implied. Implied terms in a contract include those imposed by law or regulation [2].

Implications for Hong Kong life insurers:

There are certain features commonly seen in Hong Kong which may not be eligible for this VFA criteria I: (i) different portfolios of insurance contracts with participating features (direct or indirect) share the same fund/ sub-fund with notionally separated pool of assets in which the strategic asset allocation is consistent with the entity's general account, and (ii) the segregation of asset are only managed internally without enforceability or proper disclosure to the policyholders.

While "ring fence asset" may better meet this VFA criterion, there were also discussions if the "accounting designation" or "entity's governance framework & disclosure" meeting this VFA criterion. Advocates argue that the inherent part of commercial communication, materials presented/disclosed to the policyholders can form part of the enforceability and entity should consider these factors for the assessment on "clearly identified pool of asset". In any case, it is expected that the definition of the "underlying items" should be documented clearly, and the entity cannot change the underlying items with retrospective effects [B106(a)].

(3) Does "a share of a clearly identified pool of underlying items" preclude entity's discretion to vary the amounts paid to the policyholder?

No. A share referred to in the VFA criteria I does not preclude the existence of the entity's discretion to vary the amounts paid to the policyholder. However, the link to the underlying items must be enforceable [B105].

(4) How to interpret the word "substantial" in VFA criteria II & III?

In principle, the IASB views direct participating contracts as insurance contracts that are substantially investment-related service contracts and creating an obligation to pay policyholders an amount equal in value to specified underlying items, minus a variable fee for service.

The Board does not provide further concrete definition for the term "substantial" as noted in the VFA criteria II and III. This is to allow individual entities to apply the IFRS 17 Standard for their particular circumstances without being limited by any quantitative rules. As preliminary observations, sharing percentages in excess of 90% are likely to be viewed as substantial, while sharing percentages less than 50% might be difficult to be considered as eligible for the VFA. We expect the market consensus will be converged with the potential help from TRG discussion. However, a range of sharing percentages may still be expected from various jurisdictions due to different product offerings, and its comparability with the fee structures of the investment products offered. Individual entities need to perform its own assessment, and agree its conclusion with its respective auditor.

Implications for Hong Kong life insurers:

Investment-linked assurance scheme: The policyholder bears all investment risk and market fluctuation of the underlying items, subject to the guarantees offered (if any) by the insurer. It is generally accepted that the common product features seen in Hong Kong meet the "substantial" requirement.

Participating products: There is no explicit regulation on the profit sharing between shareholders and policyholders for participating policies in Hong Kong. The assessment for the VFA criteria II and III will vary among the entity's product offerings and governance policies.

Although insurance companies have sole discretion in determining the sharing ratio, many insurers have established an internal target sharing ratio to govern the management of the participating policies (based on a survey issued by EY Actuarial & Insurance Advisory Services in 2016[2]). Amongst the insurers which have established the internal target sharing ratio, most of them sharing at least 70% with the participating policyholders. This sharing percentage established (70%) is same as the minimum statutory sharing ratio of some regions in Asia-Pacific like China and Vietnam.

Question: What is the expected sharing ratio for participating business (policyholder: shareholder)?

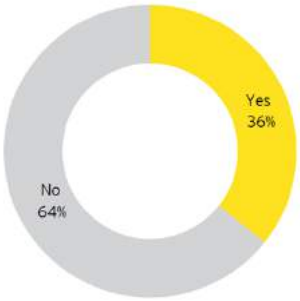
Policyholder : Shareholder	No. of insurers
90 : 10	1
85 : 15	2
80 : 20	1
70 : 30	3
50 : 50	1
Vary by product	5
No specific sharing ratio	5

We have seen more robust governance and control on the participating products after the GL 16, and we expect further enhancements in Hong Kong after IFRS 17 for the sake of the VFA eligibility.

[2] Please refer to "Treating customers fairly for the Hong Kong insurance industry Key findings from EY's Hong Kong GN 16 Market Survey 2015" (http://www.ey.com/Publication/vwLUAssets/EY_-_Treating_customers_fairly_for_the_Hong_Kong_insurance_industry/$FILE/ey-hong-kong-gn16-market-survery-2015.pdf). GN 16 is renamed as Guideline on Underwriting Long Term Insurance Business (other than Class C Business) ("GL 16"). "GN 16" and "GL 16" are used interchangeably in this article.

Universal life products: As revealed by the same survey, it is less common for insurers (only 36% of the surveyed insurers) to set up a target sharing ratio for universal life policies in Hong Kong. The assessment on the term "substantial" will be similar to that of participating products, but entity should first establish a specific sharing ratio without retrospective effect.

Question: Is there any specific sharing ratio for universal life business?



(5) What is the "variable fee"?

The VFA is designed for insurance contracts which the entity provides substantial investment-related services (in IASB's view: the entity's primary obligation is to pay to the policyholder an amount equal to the fair value of the underlying items) and the entity is then compensated for the services by a fee that is determined by reference to the underlying items. A variable fee that the entity will deduct in exchange for the future service provided by the insurance contract, comprising: (i) the entity's share of the fair value of the underlying items; less (ii) fulfilment cash flows that do not vary based on the returns on underlying items [B104].

In order to be eligible for the VFA, the contract should specify a determinable fee which can be expressed as a percentage of portfolio returns or portfolio asset values rather than only as a monetary amount. For this to be the case, the contract needs to specify that the policyholder participates in a share of a clearly identified pool of underlying items. Without a determinable fee, the share of returns on the underlying items the entity retains would be entirely at the discretion of the entity, and, in the Board's view, this would not be consistent with that amount being equivalent to a fee [BC245(a)].

(6) Can the VFA be applied to reinsurance contract?

No. Reinsurance contracts issued and reinsurance contracts held cannot be insurance contracts with direct participation features for the purposes of IFRS 17 [B109]. Hence, the VFA cannot be applied.

(7) When should the VFA eligibility assessment be conducted?

In general, the assessment should be conducted at inception only. An entity shall assess whether the conditions in paragraph B101 are met using its expectations at inception of the contract and shall not reassess the conditions afterwards, unless the contract is modified, applying paragraph 72 [B102]. The variability over the duration should be assessed, and on a PV probability-weighted average basis, not a best or worst outcome basis [B107(b)(ii)].

(8) Is there an option not to apply the VFA?

The IASB provides the general accounting model, and two modifications as known as the VFA and the premium allocation approach (PAA) for different types of contracts. While applying the PAA is an optional simplification when certain criteria are met for the short term contracts, applying the VFA is not an option nor accounting choice. The entity should apply the VFA if the VFA eligibility assessment is passed.

What to do next?

There are number of factors that require the entity's judgement for the VFA eligibility assessment. Different assessment outcomes may be resulted for a similar product sold by two insurers because of different management frameworks. Similarly, two products with similar economic nature (written by an insurer) may fall into different measurement models because of the contractual terms. All these may impact the comparability of results across the industry or within the same entity. In order to enhance the comparability across Hong Kong market, local professional/industrial organisation can be the platform allowing the industry to get together and form certain view on interpretation of IFRS 17 for Hong Kong insurers.

Similar to Solvency II experience, it is expected that certain market consensus will be converged for these judgemental areas. We noted that some insurers have already started their preliminary assessments and are expected to come up with initial view later in 2017 or early 2018. The assessment for certain products may be easier than others depending on the complexity of the product features. This VFA assessment is one of the key judgements required when implementing IFRS 17. The methodology and assessment should be properly justified, documented, and approved within the entity's governance structure. In addition, to be agreed with the entity's auditor. It is also important for individual entities to understand both the financial and operational impacts of using different measurement models at the beginning of this 3-year implementation journey.

IFRS 17 Does Not Spare Anyone

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(Disclaimer: The contents of this article is for general interest. No action should be taken on the basis of this article without seeking specific advice.)

Introduction

On 18 May 2017, the International Accounting Standards Board published the final version of International Financial Reporting Standard 17 Insurance Contracts (IFRS 17), effective for reporting periods commencing on or after 1 January 2021. This is a major milestone in what has been a long journey from the commencement of the Insurance Contracts Project in 1997. The publication of IFRS 17 is a trigger for the insurance industry to ramp up its efforts to understand and implement IFRS 17.

Central to IFRS 17 is the General Measurement Model which insurance companies will apply to determine the liabilities for their insurance contracts. A key and complex element of the General Measurement Model is the Contractual Service Margin (CSM), which serves to ensure profits are recognised over time as services are provided.

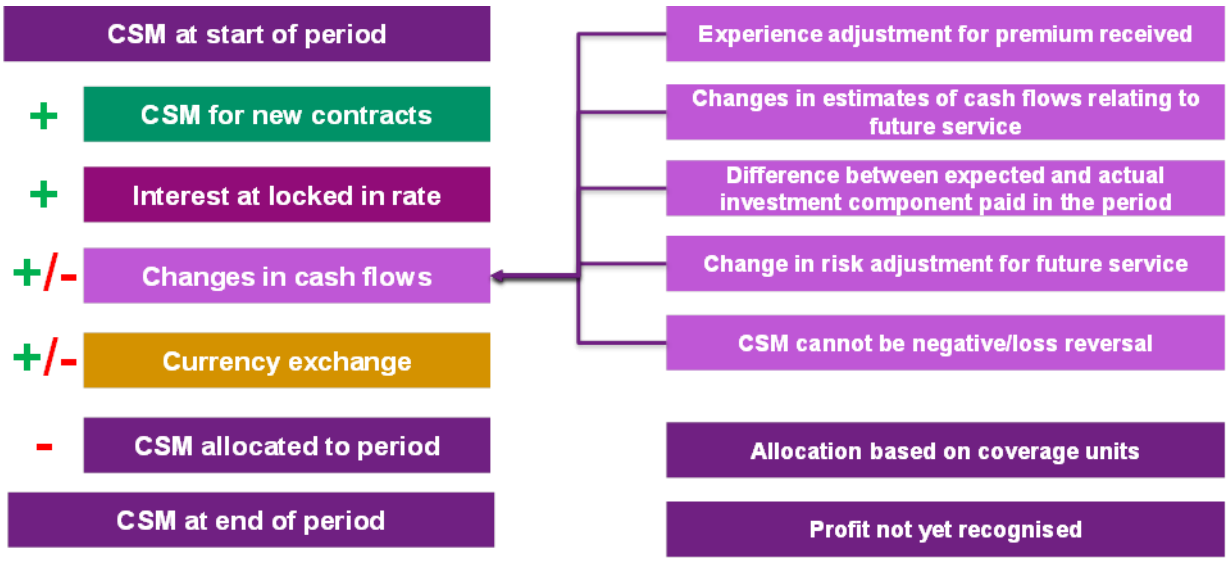
This article will tackle the main areas for an insurer to focus when implementing the IFRS 17. The central points discussed in the following sections are the CSM, challenges regarding the implementation of IFRS 17, areas within IFRS 17 where substantial judgement is needed and automation and workflow improvements.

Contractual Service Margin (CSM)

The CSM is designed to result in a smooth release of profit as insurance services are provided, which results in zero day 1 profit. The initial CSM is determined as a balancing item in order to achieve this outcome. As the CSM cannot be negative, losses are in effect recognised immediately.

Roll-forward of CSM

IFRS 17 sets out a roll-forward approach for determining the CSM and its release over time. The principal elements of the roll-forward are the addition of the CSM for any new contracts, accretion of interest at a locked in rate, changes in estimates of cash flows relating to future coverage, currency exchange effects and allocation of part of the CSM to the profit or loss for the period.



- The CSM for new contracts is similar to a market-consistent new business value. For a typical insurance contract, it represents the excess of the value of premiums over a risk-adjusted value of claims and expenses.

- Interest is accreted to the CSM each period. The interest rate for the interest accretion is locked in at rates applicable at the time the contracts were issued. Subsequent movements in market yields do not impact the CSM.

- The changes in cash flows relate to changes in the expected value of future cash flows.

  Experience adjustments, for example, a higher realised mortality are considered to relate to current or past experience and therefore do not impact the future cash flows. However, there are two exceptions to this. Firstly, the CSM roll-forward allows for an experience adjustment in relation to premiums received, as this is associated with future coverage. Secondly, there is an experience adjustment related to the repayment of investment components. This is included as there will generally be interaction between such payments during the period and any future payments (e.g. if there are more surrenders than expected during a period, resulting in higher repayments of investment components, there must be fewer surrenders or maturities in future periods as a result of this experience). The experience adjustment serves to minimise profit or loss volatility due to the timing of repayments of investment components.

  The CSM is also adjusted for changes in the risk adjustment relating to future service.

- The CSM is also adjusted for changes in the currency exchange rates.

- A part of the CSM is allocated to the profit or loss reported for each period. The allocation is based on the amount of coverage provided during the period relative to the amount of overage expected to be provided over future periods.

- The CSM cannot be negative.

  The discount rate used for the CSM roll-forward under the General Measurement Model being “locked in” has the potential to result in accounting mismatches between the CSM and the assets supporting the insurance contracts.

  These mismatches could be quite material and artificial for business such as participating business and unit linked where an insurer’s future profit is to a greater or lesser extent directly linked to its share of the fair value of the underlying pool of assets that an insurer and policyholders participate in.

  The IASB recognised this and specified a modification to the General Measurement Model for contracts with such directly participating business. The modification is commonly referred to as the Variable Fee Approach (VFA).

  In effect, this unlocks the discount rate used for the CSM roll-forward for this business, resulting in the insurer’s share of any future change in the fair value of the underlying pool of assets flowing through into the CSM. As a consequence, the accounting mismatch and profit or loss volatility that would otherwise exist is avoided, or at least reduced.

Challenges regarding the implementation of IFRS 17

The issues insurers face will vary, depending on the nature of the insurance liabilities, current insurance accounting and existing systems, models and processes.

Key considerations for both life and general insurers include:

- There will be a one-time transition exercise to the new standard, notably to determine the CSM applicable to existing business (the remaining deferred profit yet to emerge on these contracts) as at 1 January 2020 (as at least one year of comparatives is required). The default position will be to determine what the CSM would have been at the start and end of 2020 as if IFRS 17 had always applied, with simplified approaches available.

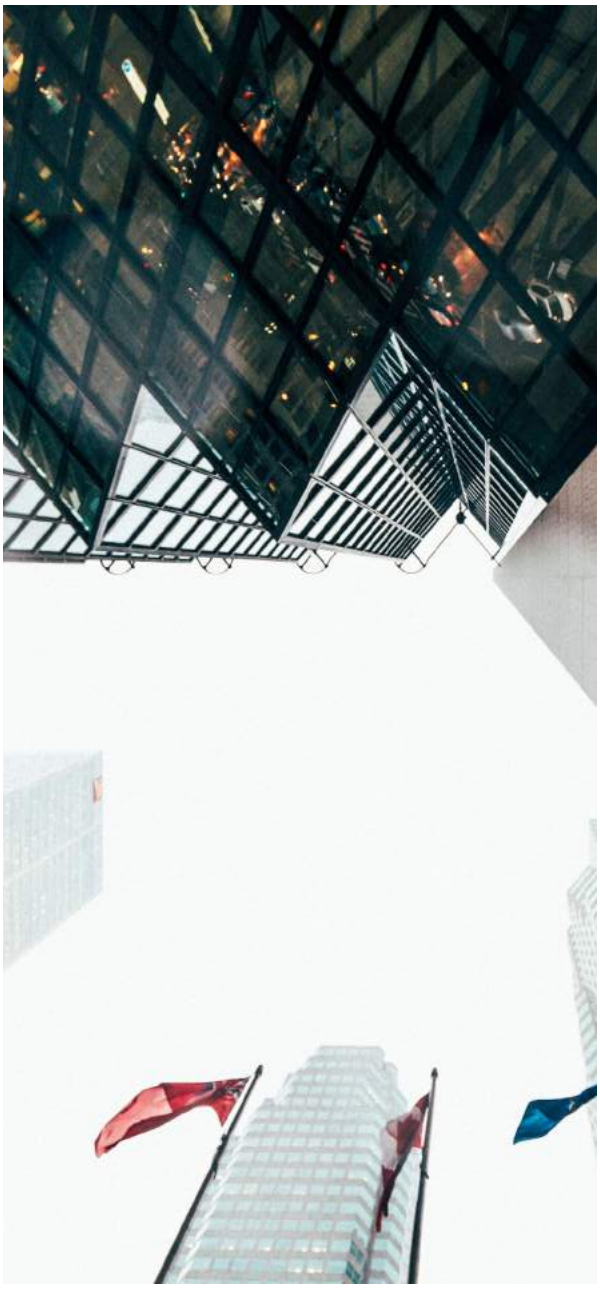
- Potential differences in measurement approach between primary insurance and reinsurance.

- How to determine and run off the risk adjustment allowing for management’s views. IFRS 17 is principles-based, allowing companies to set their own approach.

There will also be a number of key considerations for just life insurers, including:

- The roll-forward of the CSM. Understanding and appropriately implementing the necessary workings of the CSM to eliminate day 1 profits and spread effects over time will be critical to successfully adopting IFRS 17.
- For IFRS 17 the time value of options and guarantees in the insurance portfolio should be determined. For some insurers in Hong Kong, this is new. In most cases, stochastic calculations will be required to determine the time value of options and guarantees. To allow for stochastic calculations, models will need to be adjusted. A common method to determine the time value of options and guarantees is using risk neutral economic scenarios.
- The application of the requirements to participating insurance contracts; an area where market practice is likely to develop in the coming years. The VFA, which is expected to apply to participating contracts, should allow investment gains and losses to be recognised over time, with the CSM being varied to achieve this. The key considerations are to what extent and how the VFA can be applied.
- The extent to which the illiquidity of cash flows should be considered in the discount rates.
- Exclusion of any investment component from reported revenue.

For all insurers, there will also be significant additional disclosure requirements. This includes a new income statement which will take time to get used to.



Areas within IFRS 17 where substantial judgement is needed

There are a range of areas of IFRS 17 where substantial judgement is required, including product grouping, discount rates and the risk adjustment. The IFRS 17 principles leave much room for different interpretations and methodologies. Depending on the methodology implemented, the resulting balance sheet and/or statement of comprehensive income behavior will be significantly different. Therefore, it is important for insurers to consider various methodologies and consider the financial and operational impacts for each before deciding on which methodology to adopt.

Product grouping

IFRS 17 requires the business to be segmented into portfolios of contracts that have similar risks and are managed together, e.g. it would not be appropriate to combine endowment policies with term insurance policies.

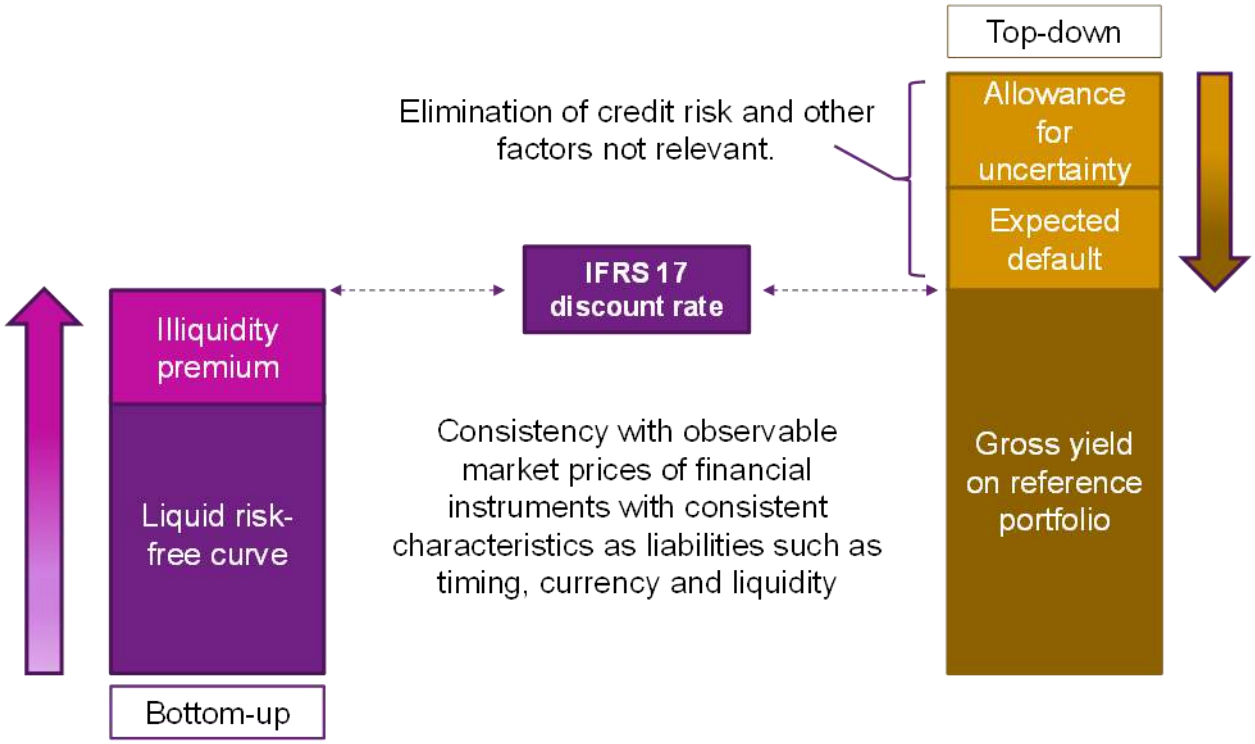
Portfolios need to be sub-divided into at least three groups, contracts that are:

1. onerous at outset;
2. have no significant possibility of becoming onerous; and
3. other contracts.

The allocation to groups is to be done on a contract-by-contract basis, except when an insurer can determine, using reasonable and supportable information, that a set of contracts will all be allocated to the same group.

Groups are further split in annual cohorts. Contracts within a group cannot be issued more than one year apart.

The CSM roll-forward described above is to be performed separately for each resulting group of contracts. The more groups there are, the more likely some groups will become onerous.



Discount rate

The discount rate setting is another area with considerable judgement.

The main principle in determining the discount rate is that the discount rates need to be consistent with the market prices for financial instruments whose cash flows are consistent to those of the insurance liabilities in terms of timing, currency and liquidity.

IFRS 17 allows two different ways setting the discount rates for insurance contracts that do not vary based on performance of underlying items: the bottom-up approach and the top-down approach.

The bottom up approach starts with a suitable risk-free curve and adjusts this to reflect the different liquidity characteristics of the insurance liabilities. In effect an illiquidity premium is added. Considerable judgement will be required regarding the methodology to be used for the determination of the illiquidity premium.

In contrast the top down approach starts with the yield on a reference portfolio of assets and then removes allowances for any factors not relevant to the contracts. In reality the most common adjustments that would be needed relate to duration mismatches and credit risk, for both expected and unexpected defaults. Relatively little guidance is given as to how to determine the adjustment for credit risk, although reference is made to estimating the effect of credit risk using credit derivatives.

A key point to note is that the discount rate needs to reflect the characteristics of the liabilities and as such the choice of backing assets should not influence this (where the liabilities do not depend on the asset performance).

In theory both approaches should lead to the same discount rate. However, in practice this may not be the case.

Risk adjustment

IFRS 17 contains only general guidance about the methodology for the calculation of risk adjustment. A key principle is that the risk adjustment should "reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk" and some general characteristics such as the risk adjustment should be larger for contracts with lower frequency, higher severity or longer duration.

This is a potentially material area for judgment to be applied as, for many companies, the risk adjustment could be significant relative to annual profits.

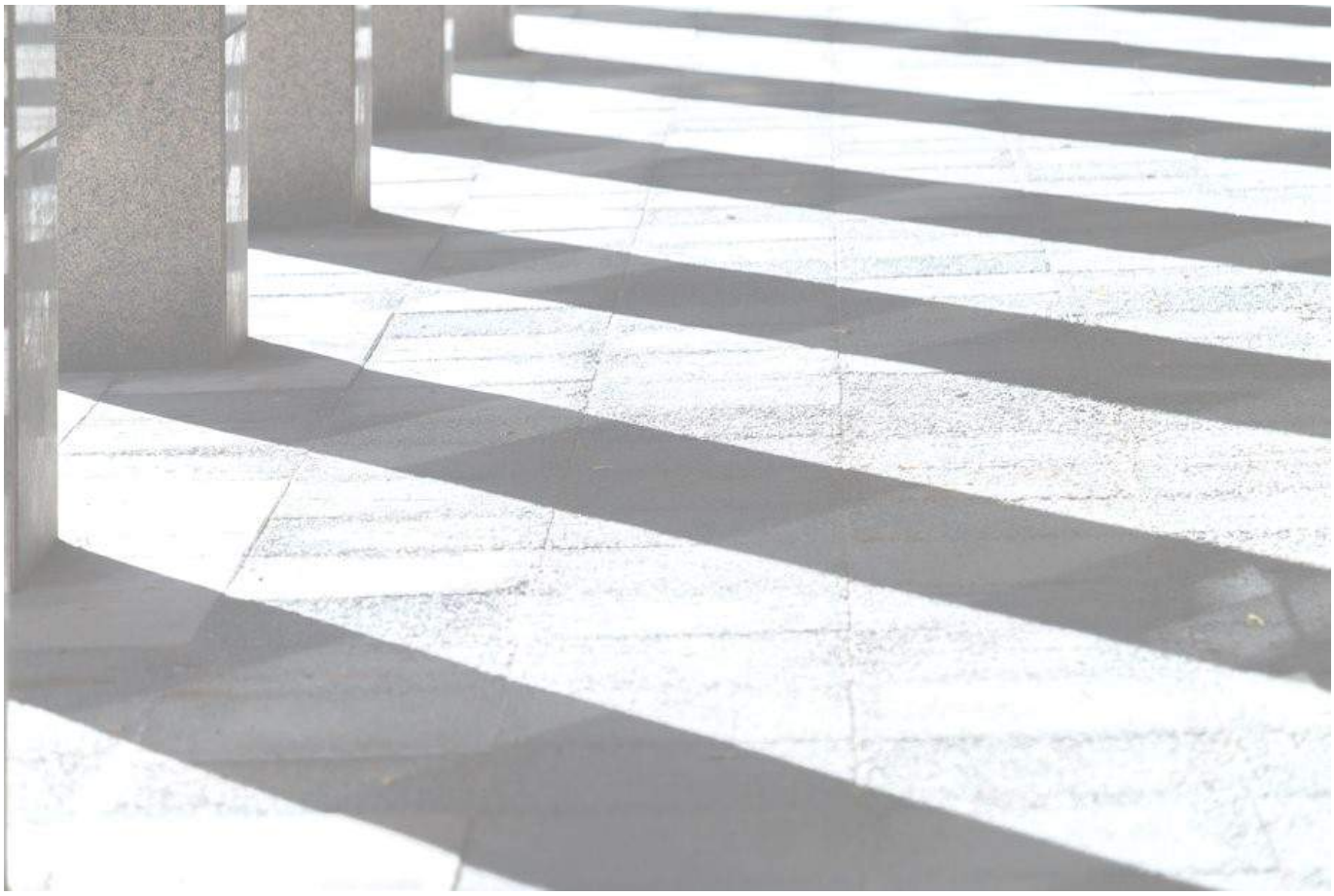
While the need to apply judgment when interpreting various aspects of the final standard represents a significant challenge for insurance companies, it is also an opportunity. The principles-based approach implies that a variety of approaches are potentially acceptable. This means that companies can select approaches which work best for them.

Automation and workflow improvements

IFRS 17 is much more complex than the current reporting standards. As the time available to companies to produce results will not be increasing, automation and/or workflow improvements will be essential for a successful implementation of IFRS 17. This will require a revolution in the actuarial reporting processes.

Currently, the processes around actuarial models are in many cases heavily manual. To make IFRS 17 a success, insurers will need to introduce best practice reporting processes incorporating an Enterprise workflow process for IFRS 17, which will need to be defined specific to each business, linked to its overall information technology architecture. This process needs to be repeatable through automation and scheduling and have appropriate definitions of roles, access controls and the ability to lock down models. It should also have automated handling of data, contract grouping and calculations, all the way through to reporting of results.

The major changes required for the implementation of IFRS 17, should not be viewed as just a compliance exercise, but more as an opportunity for broad process improvement, ultimately releasing resources from performing valuations to being more engaged in considering the outcomes and business implications of the new reporting metrics.



IFRS 17: A Technical Discussion on Investment Component

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In this article, I would discuss a long debated topic since 2013 ED, the *investment component*. The IASB thinks that, without investment component, the standard would not faithfully represents the similarities between financial instruments within the scope of IFRS 9 and investment component embedded in insurance contracts within the scope of IFRS 17[1].

To understand the calculation and eventually the controversial part of investment component, let's start with the definition in the standard first:

> *The amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur*[2]

To better understand the issue, we shall start with an illustrative example.

> *Assume a single pay insurance contract with $10,000 payable upon death and maturity. Surrender value is linearly interpolated between years. Interest expense is 3% and actual investment return is 4%. Mortality is assumed level 0.5% and lapse rate level 1%. Premium is set equal to present value of outgo, plus a 10% margin. Risk adjustment and expense are assumed 0 for simplicity. We use Present Value of Number of Policies (PVNOP) as the CSM carrier.*

Key calculation steps are shown in Appendix A.

We further make the following assumption: Investment component per death is equal to the surrender value (or total cash value)[3]. Therefore, the total investment component is defined by:

$$Invt\ Comp = TCV \times \#\ Deaths + Surrender\ Outgo + Maturity\ Outgo$$

The income statement generated from the above setup is:

	1	2	3	4	5
Expected Claims	69.90	88.46	106.44	123.87	9,415.28
Expected Investment Component	-29.90	-58.91	-87.04	-114.32	-9,415.28
CSM Release	190.62	187.77	184.97	182.20	179.48
Insurance Contract Revenue	230.62	217.33	204.37	191.76	179.48
Actual Claims	69.90	88.46	106.44	123.87	9,415.28
Actual Investment Component	-29.90	-58.91	-87.04	-114.32	-9,415.28
Insurance Service Expense	40.00	29.55	19.41	9.56	0.00
Insurance Service Result	**190.62**	**187.77**	**184.97**	**182.20**	**179.48**
Insurance Finance Income	373.14	373.91	374.08	373.65	372.61
Insurance Finance Expense	279.85	280.43	280.56	280.23	279.46
Insurance Finance Income or Expense	**93.28**	**93.48**	**93.52**	**93.41**	**93.15**
Profit or Loss	**283.91**	**281.25**	**278.49**	**275.61**	**272.63**

[1] Basis for Conclusion: BC 34
[2] Standard: Appendix A
[3] Staff Paper 2B, April 2014

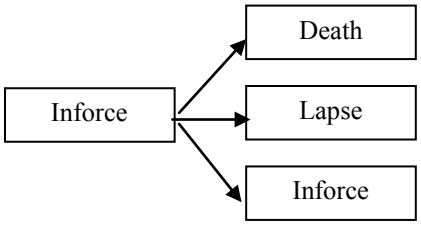
So far so good. Now, let's change the surrender value that it becomes 0 throughout the contract.

	1	2	3	4	5
Expected Claims	50.00	49.25	48.52	47.79	9,321.59
Expected Investment Component	0.00	0.00	0.00	0.00	-9,274.52
CSM Release	184.83	182.07	179.35	176.67	174.02
Insurance Contract Revenue	234.83	231.32	227.86	224.46	221.10
Actual Claims	50.00	49.25	48.52	47.79	9,321.59
Actual Investment Component	0.00	0.00	0.00	0.00	-9,274.52
Insurance Service Expense	50.00	49.25	48.52	47.79	47.08
Insurance Service Result	**184.83**	**182.07**	**179.35**	**176.67**	**174.02**
Insurance Finance Income	361.80	363.26	364.91	366.74	368.76
Insurance Finance Expense	271.35	272.45	273.68	275.05	276.57
Insurance Finance Income or Expense	**90.45**	**90.82**	**91.23**	**91.68**	**92.19**
Profit or Loss	**275.28**	**272.88**	**270.57**	**268.35**	**266.21**

One can see that, the investment component becomes 0 from year 1-4. Since there are no surrender outgo nor survival outgo, and the investment component per death is nil, naturally it follows that the investment component is 0.

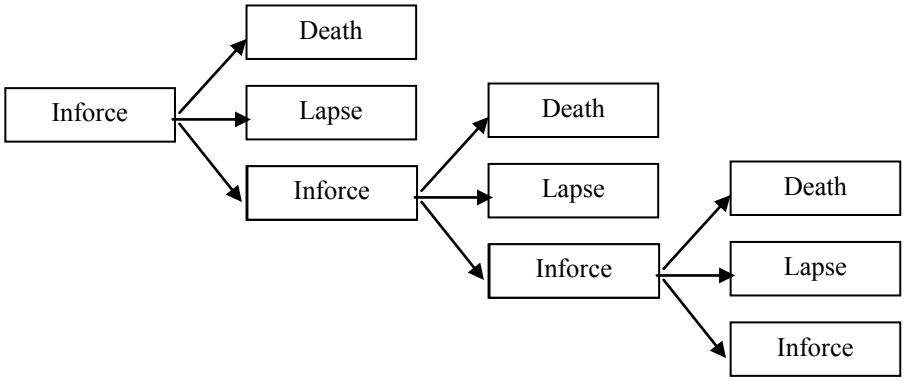
Here is the question: The contract is by nature a pure investment contract. The insured gets the same amount regardless of whether he died or not (unless he chooses to lapse). But the investment component is 0, contradicts the policy setup.

The weird situation illustrated above is coming from the fact that, even if an insured event (death) does not occur, 2 situations may occur, namely: lapse or inforce (not lapse). Only considering surrender value ignores the amount that is potentially payable if the policyholder chooses not to lapse.



For example, in the above example, If the policyholder chooses "not lapse", the value that he can get is actually 10,000 (Maturity Benefit or Death Benefit) instead of 0 (the Surrender Value).

And, if we extend the logic forward, actually we need to consider all future period for the possibility. And in each period, we do not know how the policyholder will act (whether he chooses to lapse or not).



This leads to the following possible interpretations for the definition:

Interpretation 1: Investment Component is…

> *The current amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur*

This is the preferred (or default?) option of how IASB interprets investment component. However, this definition will be problematic in the example I have introduced above.

$$Invt\ Comp\ \ Per\ Death = TCV_t$$

Interpretation 2: Investment Component is…

> *The maximum amounts until the end of contract that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur*

$$Invt\ Comp\ Per\ Death = Max(TCV_t, TCV_{t+1} \times v, \ldots TCV_N \times v^{N-t}, MB_N \times v^{N-t})$$

This interpretation is able to solve the example I have mentioned. However, this definition implicitly implies the policyholder is completely rational, which will choose the option (to lapse or not) to maximise his gain / loss from the contract. In addition, say, if the contract is a unit-linked contract, the expected future surrender value is non-guaranteed and is not a "required" amount (but expected to be required) the entity need to repay to the policyholder.

The income statement generated from the above interpretation is:

	1	2	3	4	5
Expected Claims	50.00	49.25	48.52	47.79	9,321.59
Expected Investment Component	-44.42	-45.07	-45.73	-46.40	-9,321.59
CSM Release	184.83	182.07	179.35	176.67	174.02
Insurance Contract Revenue	190.41	186.25	182.13	178.06	174.02
Actual Claims	50.00	49.25	48.52	47.79	9,321.59
Actual Investment Component	-44.42	-45.07	-45.73	-46.40	-9,321.59
Insurance Service Expense	5.58	4.18	2.79	1.39	0.00
Insurance Service Result	**184.83**	**182.07**	**179.35**	**176.67**	**174.02**
Insurance Finance Income	361.80	363.26	364.91	366.74	368.76
Insurance Finance Expense	271.35	272.45	273.68	275.05	276.57
Insurance Finance Income or Expense	**90.45**	**90.82**	**91.23**	**91.68**	**92.19**
Profit or Loss	**275.28**	**272.88**	**270.57**	**268.35**	**266.21**

Interpretation 3: Investment Component is…

> *The minimum amounts until the end of contract that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur*

$$Invt\ Comp\ Per\ Death = Min(TCV_t, TCV_{t+1} \times v, \ldots TCV_N \times v^{N-t}, MB_N \times v^{N-t})$$

This interpretation attempts to strictly adhere to the standard's wording "required amount". However, this will bring the 0 TCV issues back, like interpretation 1.

Interpretation 4: Investment Component is…

> *The higher of current amounts, or future expected amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur*

$$Invt\ Comp\ Per\ Death = Max(TCV_t, BEL\_PP_t)$$

This interpretation takes the current amount required to repay, as well as the future expected amount together. It assumed the bounded rationality of the policyholder (and also the entity from a valuation perspective), such that he / she can only choose to lapse or not at the current period. Future repay amount is proxy by the expected present value of future outgoes per policy (BEL_PP).

The income statement generated from the above interpretation is[4]:

	1	2	3	4	5
Expected Claims	50.00	49.25	48.52	47.79	9,321.59
Expected Investment Component	-42.74	-43.77	-44.83	-45.94	-9,321.59
CSM Release	184.83	182.07	179.35	176.67	174.02
Insurance Contract Revenue	192.10	187.55	183.03	178.52	174.02
Actual Claims	50.00	49.25	48.52	47.79	9,321.59
Actual Investment Component	-42.74	-43.77	-44.83	-45.94	-9,321.59
Insurance Service Expense	7.26	5.48	3.68	1.85	0.00
Insurance Service Result	**184.83**	**182.07**	**179.35**	**176.67**	**174.02**
Insurance Finance Income	361.80	363.26	364.91	366.74	368.76
Insurance Finance Expense	271.35	272.45	273.68	275.05	276.57
Insurance Finance Income or Expense	**90.45**	**90.82**	**91.23**	**91.68**	**92.19**
Profit or Loss	**275.28**	**272.88**	**270.57**	**268.35**	**266.21**

One may argue that, at the end it doesn't matter since investment component is only a *line item* in presentation, and the Revenue and Expense will cancel out each other so it has no impact on the Insurance Service Result (as indicated in the P&L result above).

Unfortunately, the IASB has decided in the final standard that, experience variance on investment component will unlock the CSM[5]. Hence, even it has no impact when actual equals expected, it does create P&L volatility if experience variance exists. You may take a look on the results generated by the above interpretations in Appendix B if experience variance exists, and decide which approach makes up your mind.

The example that I have mentioned above demonstrated that why the choice of surrender value as the "amount required to repay" is insufficient, as it forfeits the obligation that may be required to fulfill in the future, which is also part of "*the amount required to repay even if insured event does not occur*".

Here is a summary for the 4 interpretations:

#	Reason for support	Reason for decline
1	Simple and practical, support by the IASB's examples	Ignored future obligations
2	Most prudent	Unrealistic as assuming 100% rationality Depends on product feature, "required" amount is weird to apply on non-guaranteed CV
3	Strictly adhere to the standard's wording "required amount"	May ignore future obligations Depends on product feature, "required" amount is weird to apply on non-guaranteed CV
4	Balance between the above approaches	Not intuitive, does not imply from the wording in the standard

To conclude…what is the answer?

I don't know. What do you think?

[4] The differences between interpretation 4 and 2 is that, interpretation 4 considered the decrement transition for the policyholder in the future period, and interpretation 2 does not

[5] Standard: B96 (c)

Appendix A: Key calculation steps

	Decrements				
Year	Mort	Lapse	# Deaths	# Surrs	NOP_IF
0					1.0000
1	0.50%	1%	0.0050	0.0100	0.9851
2	0.50%	1%	0.0049	0.0098	0.9703
3	0.50%	1%	0.0049	0.0097	0.9558
4	0.50%	1%	0.0048	0.0095	0.9415
5	0.50%	1%	0.0047	0.0094	0.9275

	Cashflows						
Year	DB_PP	SURR_PP	MAT_PP	DB_Out	Surr_Out	Mat_Out	Total Out
0							
1	10,000	2,000	0	50.00	19.90	0.00	69.90
2	10,000	4,000	0	49.25	39.20	0.00	88.46
3	10,000	6,000	0	48.52	57.93	0.00	106.44
4	10,000	8,000	0	47.79	76.08	0.00	123.87
5	10,000	10,000	10,000	47.08	93.68	9,274.52	9,415.28

	Discounting					
Year	Disc_Rate	Disc_Fac	PV_DB	PV_SURR	PV_MAT	PV_Outgo
0		100%	222.44	257.70	8,000.28	8,480.42
1	3%	97%	179.11	245.53	8,240.29	8,664.93
2	3%	94%	135.23	213.69	8,487.50	8,836.42
3	3%	92%	90.77	162.17	8,742.12	8,995.07
4	3%	89%	45.71	90.95	9,004.39	9,141.05
5	3%	86%	0.00	0.00	0.00	0.00

Premium				
Profit_Margin	Prem_DB	Prem_Surr	Prem_Mat	Prem_Total
10%	244.68	283.47	8,800.31	9,328.46

	CSM @ Init Recog		CSM @ Subsequent		
Year	BEL	CSM	CSM_Int	CSM_Amort	CSM_RF
0	-848.04	848.04			848.04
1	8,664.93		25.44	190.62	682.86
2	8,836.42		20.49	187.77	515.57
3	8,995.07		15.47	184.97	346.07
4	9,141.05		10.38	182.20	174.25
5	0.00		5.23	179.48	0.00

	Interest Margin					
Year	Invt Ret	Interest Income	Interest Expense	BEL	CSM	Interest Margin
0						
1	4%	373.14	279.85	254.41	25.44	93.28
2	4%	373.91	280.43	259.95	20.49	93.48
3	4%	374.08	280.56	265.09	15.47	93.52
4	4%	373.65	280.23	269.85	10.38	93.41
5	4%	372.61	279.46	274.23	5.23	93.15

	Profit					
Year	CSM Release	Exp Var on CFs	Exp Var on Invt Comp	Profit	Trad Profit	Check
0						
1	190.62	0.00	0.00	283.91	283.91	*0.00*
2	187.77			281.25	281.25	*0.00*
3	184.97			278.49	278.49	*0.00*
4	182.20			275.61	275.61	*0.00*
5	179.48			272.63	272.63	*0.00*

Appendix B: Experience Variance (10 times death)

Interpretation 1 or 3

	1	2	3	4	5
Expected Claims	50.00	47.03	46.32	45.63	8,900.02
Expected Investment Component	0.00	0.00	0.00	0.00	-8,855.07
CSM Release	262.55	265.41	261.44	257.53	253.68
Insurance Contract Revenue	312.55	312.43	307.76	303.16	298.63
Actual Claims	500.00	47.03	46.32	45.63	8,900.02
Actual Investment Component	0.00	0.00	0.00	0.00	-8,855.07
Insurance Service Expense	500.00	47.03	46.32	45.63	44.95
Insurance Service Result	**-187.45**	**265.41**	**261.44**	**257.53**	**253.68**
Insurance Finance Income	361.80	360.15	358.46	356.90	355.48
Insurance Finance Expense	271.35	270.11	268.84	267.68	266.61
Insurance Finance Income or Expense	**90.45**	**90.04**	**89.61**	**89.23**	**88.87**
Profit or Loss	**-97.00**	**355.44**	**351.05**	**346.75**	**342.55**

Interpretation 2

	1	2	3	4	5
Expected Claims	50.00	47.03	46.32	45.63	8,900.02
Expected Investment Component	-44.42	-43.03	-43.66	-44.30	-8,900.02
CSM Release	175.29	179.46	176.77	174.13	171.53
Insurance Contract Revenue	180.87	183.45	179.43	175.46	171.53
Actual Claims	500.00	47.03	46.32	45.63	8,900.02
Actual Investment Component	-444.24	-43.03	-43.66	-44.30	-8,900.02
Insurance Service Expense	55.76	3.99	2.66	1.33	0.00
Insurance Service Result	**125.11**	**179.46**	**176.77**	**174.13**	**171.53**
Insurance Finance Income	361.80	347.65	349.02	350.57	352.29
Insurance Finance Expense	271.35	260.74	261.76	262.92	264.22
Insurance Finance Income or Expense	**90.45**	**86.91**	**87.25**	**87.64**	**88.07**
Profit or Loss	**215.56**	**266.37**	**264.03**	**261.77**	**259.60**

Interpretation 4

	1	2	3	4	5
Expected Claims	50.00	47.03	46.32	45.63	8,900.02
Expected Investment Component	-42.74	-41.79	-42.81	-43.86	-8,900.02
CSM Release	178.61	182.72	179.99	177.30	174.65
Insurance Contract Revenue	185.87	187.96	183.51	179.07	174.65
Actual Claims	500.00	47.03	46.32	45.63	8,900.02
Actual Investment Component	-427.36	-41.79	-42.81	-43.86	-8,900.02
Insurance Service Expense	72.64	5.24	3.51	1.77	0.00
Insurance Service Result	**113.23**	**182.72**	**179.99**	**177.30**	**174.65**
Insurance Finance Income	361.80	348.12	349.38	350.81	352.41
Insurance Finance Expense	271.35	261.09	262.03	263.11	264.31
Insurance Finance Income or Expense	**90.45**	**87.03**	**87.34**	**87.70**	**88.10**
Profit or Loss	**203.68**	**269.75**	**267.33**	**265.00**	**262.75**

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Hong Kong Mandatory Provident Fund Annuitisation for Retirees

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Introduction

Hong Kong's Mandatory Provident Fund (MPF) is a defined contribution retirement system, where each participant has one or more accounts. The account balance, total of all the accounts, is the accumulated contributions and investment returns. A retiree's retirement income from MPF is dependent on the account balance and subject to investment volatilities, unless invested in low and stable return unitised funds. With increasing life expectancy, retirees are facing longevity risk (i.e., the possibility of depleting their MPF balance before demise). MPF retirees can pool their account balance to form a group annuity scheme to manage the investment and longevity risk.

An important benefit of investment and longevity pooling with a group annuity scheme is that a scheme participant can receive a larger lifetime income than investing the MPF balance and making income withdrawals on their own. Since an age 65 individual's life expectancy can't be accurately predicted, the person would need a retirement fund to cover 25 to 30 years of living expenses. However, on a group basis, the life expectancy at age 65 can be predicted fairly accurately, 21.6 years for males and 24.3 for females. With a large pool of professionally managed assets, a group annuity scheme can use sophisticated investment and hedging strategies to achieve higher stable returns than most individuals managing their own investments. The combination of group life expectancy and higher investment returns will generate a larger retirement income for the retirees.

In later sections of this article, there will be discussions on using group fixed and variable life annuity schemes to annuitise the MPF balance for retirement income.

Hong Kong Old Age Benefit Enhancements

On January 2017, after a year-long public consultation and deliberation, the Hong Kong government issued the Poverty Alleviation and Retirement Protection report. In the report, the government stated that it will explore MPF enhancements to meet the retirees' needs and help them manage the investment and longevity risk. The report also announced the addition of a higher tier of $3,435 monthly income, above the basic $2,565 amount, under the Old Age Living Allowance (OALA) Scheme for retirees who meet the income and asset requirements. The investment and longevity risk, associated with the OALA monthly income, are borne by the government.

A summary of the estimated OALA income values is shown below:

Estimated Lump Sum Value of OALA Income at Age 65			
	Monthly Income	Discount rate 3%	Discount rate 4%
Male	$3,435	$628,451	$567,996
Female	$3,435	$672,988	$604,374
Male	$2,565	$469,280	$424,137
Female	$2,565	$502,537	$451,301

Note: The lump sum values are estimated using US MP-2014 Mortality Table with MP-2015 Mortality Improvement Scale, and the values can be larger, as Hong Kong life expectancy is greater than US life expectancy.

The OALA benefits are very valuable in comparison to the average MPF balance on September 2016 of $234,000 ($655.5 billion total MPF account value, page 66 of the 2017 government report, for 2.8 million participants). Since the average MPF balance included participants with low account value, middle to high income MPF participants, who have continually made contributions since 2001, are likely to have a higher MPF balance.

A fair number of non OALA qualified MPF participants, retiring in the next 5 to 10 years, will have an account balance less than the estimated OALA lump sum values. These retirees will need to rely on a portion of personal savings and investments together with the MPF balance to generate retirement income similar to the OALA benefits.

Post-retirement Income from MPF and Personal Savings

For the non OALA qualified MPF retirees, it would be useful to identify the retirement income needed to maintain a comparable pre-retirement living standard. One way to measure the needed post-retirement income is the income replacement percentage (i.e., retirement income as a percentage of income immediately before retirement). The income replacement percentage should reflect the pre-retirement income level, pre and post-retirement income tax rates and living expenses, available post-retirement benefits (i.e., pension, medical and transportation subsidies…etc), inflation and other factors. In general, the income replacement percentage is 80% or higher for lower income retirees, 70% for middle income retirees and 50% to 60% for high income retirees. The reason for a higher replacement percentage for the low income retirees is because their living expenses are a larger percentage of pre-retirement income. For illustration purpose, the lump sum values of 60% to 80% income replacement are shown below:

Retirement Income and Lump Sum Value at Age 65				
Male Retirees				
Pre-retirement Monthly Income	$15,000	$25,000	$40,000	$60,000
Post-retirement Income Replacement %	80%	75%	70%	60%
Post-retirement Monthly Income	$12,000	$18,750	$28,000	$36,000
Lump Sum Value of Income 4% Return	$1,984,264	$3,100,413	$4,629,950	$5,952,793
Lump Sum Value of Income 3% Return	$2,195,462	$3,430,409	$5,122,744	$6,586,385
Female Retirees				
Pre-retirement Monthly Income	$15,000	$25,000	$40,000	$60,000
Post-retirement Income Replacement %	80%	75%	70%	60%
Post-retirement Monthly Income	$12,000	$18,750	$28,000	$36,000
Lump Sum Value of Income 4% Return	$2,111,352	$3,298,987	$4,926,487	$6,334,055
Lump Sum Value of Income 3% Return	$2,351,051	$3,673,518	$5,485,787	$7,053,154

Note: The lump sum values are estimated with US MP-2014 Mortality Table and MP-2015 Mortality Improvement Scale with 4% and 3% annual post-retirement investment return.

The table shows the lump sum value of a lifetime income with 3% investment return, compared to 4% return, is 10.6% and 11.3% larger respectively for male and female. The numbers illustrate the effect of investment returns for post-retirement income.

The lump sum values for generating 60% to 80% post-retirement income replacement indicated many retirees need to have a large total retirement fund, at age 65, from MPF balance and personal savings/ investments. To accumulate the lump sum values for retirement income replacement, the required total monthly MPF contribution and personal savings is shown below:

Monthly Retirement Savings for 35 Years to Age 65

Male Retirees				
Pre-retirement Monthly Income	$15,000	$25,000	$40,000	$60,000
Post-retirement Income Replacement %	80%	75%	70%	60%
Post-retirement Monthly Income	$12,000	$18,750	$28,000	$36,000
Lump Sum Value of Income	$1,984,264	$3,100,413	$4,629,950	$5,952,793
Lump Sum Value of OAA pension	$155,868	$155,868	$155,868	$155,868
Lump Value After OAA Offset	$1,828,396	$2,944,545	$4,474,082	$5,796,925
Monthly Savings with 5% Return	$1,646	$2,651	$4,028	$5,220
Monthly Savings with 6% Return	$1,328	$2,139	$3,250	$4,211

The value at age 65 of $1,325 OAA monthly benefit payable from age 70 is $155,868 with 4% discount rate.

Female Retirees				
Pre-retirement Monthly Income	$15,000	$25,000	$40,000	$60,000
Post-retirement Income Replacement %	80%	75%	70%	60%
Post-retirement Monthly Income	$12,000	$18,750	$28,000	$36,000
Lump Sum Value of Income	$2,111,352	$3,298,987	$4,926,487	$6,334,055
Lump Sum Value of OAA pension	$167,451	$167,451	$167,451	$167,451
Lump Value After OAA Offset	$1,943,901	$3,131,536	$4,759,036	$6,166,604
Monthly Savings with 5% Return	$1,750	$2,820	$4,285	$5,552
Monthly Savings with 6% Return	$1,412	$2,275	$3,457	$4,479

The value at age 65 of $1,325 OAA monthly benefit payable from age 70 is $167,451 with 4% discount rate.

Note: The monthly savings shown above are based on pre-retirement annual investment return of 5% and 6%. The lump sum values are based 4% post-retirement investment return.

The monthly savings needed to reach the lump sum value are 24% higher with 5% pre-retirement investment return compared to 6%, highlighting the importance of pre-retirement investment returns.

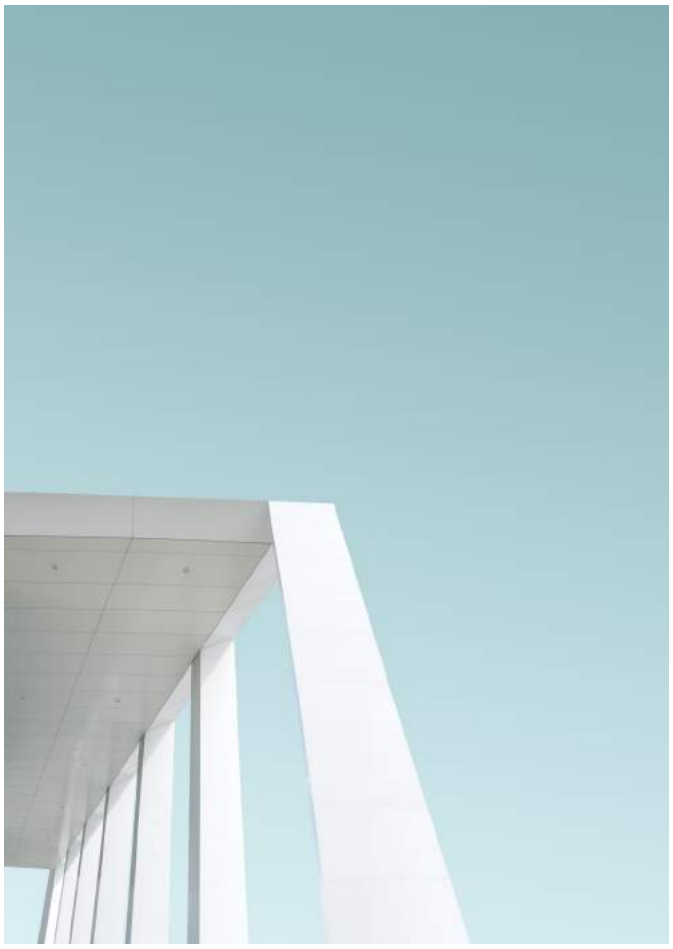
One may conclude that a logical pre-retirement investment strategy is to take maximum risk to achieve 7% to 8% average annual return to reduce the needed monthly savings or accumulate a larger retirement lump sum for a higher income replacement. Analyses of historical investment return data showed the probability of achieving an average return of 8% is lower than an average return of 5%. This is because high return investments have higher volatility (i.e., large and frequent swings of positive and negative returns). The lower probability also applies to achieving the targeted lump value and the corresponding retirement income. Therefore, it is prudent to save and invest with a high probability of accumulating the lump sum value for post-retirement income.

In summary, the lump sum values for retirement income and monthly savings are greatly affected by the pre and post-retirement investment returns. Another important factor for accumulating a larger MPF balance is reducing the administration and investment fees. Over a 35-year period to save for retirement, a 1% reduction in annual fees would translate to a 24% larger MPF balance to generate retirement income. Furthermore, a 1% reduction in annual fees for the post-retirement years would increase the annual income around 11%.

Generating Retirement Income with MPF Account Balance

The above information showed that many non OALA eligible retirees will rely on their MPF balance and personal savings for retirement income, as their MPF balance will likely be less than the needed retirement lump sum. With the Hong Kong government evaluating the introduction of a public annuity scheme for MPF retirees, discussions will focus on generating retirement income with the MPF balance.

There are various ways to use the MPF balance to generate income for retirement living expenses. Some examples are: 1) withdraw annually 3% to 4% of the MPF balance, 2) withdraw an amount equals to the MPF balance divided by the retiree's life expectancy…etc. Depending on the MPF investments and returns, the annual withdrawals can be volatile, unless invested in stable low return investments. The withdrawals can deplete the MPF balance, if annual returns are low or investment values are down for a period of time, or the withdrawals become very small after 15 to 20 years to conserve the MPF balance. Another way is to annuitise the MPF balance for a lifetime income.



The annuitisation discussions will focus on converting the MPF balance, at retirement, into a fixed or variable life annuity. A fixed life annuity (FLA) will provide a fixed amount of annual income. A variable life annuity (VLA) will likely provide a larger lifetime income than a FLA, but the annual income amount can vary up or down reflecting the investment returns. However, there are ways to manage the negative investment returns to stabilise the VLA annual income.

To provide a fixed annual income, the investments backing the FLAs are mostly invested in government bonds, high quality corporate bonds and other fixed income instruments. Also, the cash flow (i.e., coupon/ interest income and principal repayments) of the fixed income investments are matched with the expected FLA payments.

With the current ultra low interest rate environment, most high quality fixed income investments provide a return ranging from .5% for 1-year maturity to 4% for 30-year maturity. The current Hong Kong government bond yields are around .5% for 1-year, 1.53% for 10-year and 1.61% for 15-year. Hong Kong retirees' life expectancy at age 65 is estimated to reach 21.6 years for men and 24.3 years for women (extrapolated from MPF projected 2064 life expectancy of Hong Kong people). There is a lack of long term bonds to match the annuity payments beyond 15 years. Therefore, bonds outside of Hong Kong may have to be utilised. US bonds are good substitute due to the depth and size of the fixed income markets plus the pegging of the Hong Kong currency to the US dollar. Such is the approach used by some Hong Kong insurance companies for their US dollar life insurance policies.

The June 30, 2017 US government bond yields were 1.24% for 1-year, 2.31% for 10-year and 2.84% for 30-year. High quality corporate bond yields, using the Citigroup pension yield curve (AA corporate bonds), were 1.66% for 1-year, 3.13% for 10-year and 4.09% for 30-year.

For the MPF annuitisation discussions, the above bond yields are used to develop the interest rates to convert the MPF balance into a FLA. The interest rate development methodologies are similar to the life annuity premium pricing process.

The interest rate development process used by US insurance companies for annuity pricing frequently involves detailed stochastic projections on policyholder demographics, investments, cash flow matching, required regulatory reserve…etc under various financial and economic scenarios. For the purpose of MPF annuitisation illustrations, a simplified interest rate development process is used for this article.

The simplified interest rate development process is focused on a group of age 65 retirees. Using US MP-2014 Mortality Table with MP-2015 Mortality Improvement Scale, the interest rate derived from matching the expected annual annuity payments for a retiree group at age 65 is 1.52%, based on Hong Kong government bond yields with the yield after 15 years equal to the 15th year yield. Similarly, the interest rate is 2.42% using US government bond yields. The corresponding interest rate is 3.41% using the Citigroup pension yield curve. The current historically low interest rate environment has caused the annuitisation interest rates to be very low, greatly reducing the annuity income.

To gain higher stable investment returns, many US variable annuity insurers, with guaranteed lifetime withdrawal benefit policies, are investing in high quality corporate bonds and managed volatility funds. Managed volatility funds invest in equity, bond…etc index with an allocation adjustment process reflecting market volatility (replicating a put option) for downside protection. Using a portion of the investments to match the Citigroup pension yield curve with annuity payments for 10 years and the remainder in a S&P 500 Index managed volatility fund, an interest rate of 5.25% can be achieved.

A comparison of the annual annuity income, under various interest rates, is presented below.

Conversion of MPF Balance into Lifetime Income

		Male Age 65 Lifetime Monthly Income from MPF Balance				
	Interest Rate	$500,000	$750,000	$1,000,000	$1,250,000	$1,500,000
HK Government Bonds	1.52%	$2,497	$3,745	$4,993	$6,242	$7,490
US Treasury Bonds	2.42%	$2,746	$4,119	$5,492	$6,865	$8,238
Citi Pension Yield Curve	3.41%	$3,031	$4,546	$6,062	$7,577	$9,093
Variable Annuity	5.25%	$3,579	$5,368	$7,158	$8,947	$10,737

		Female Age 65 Lifetime Monthly Income from MPF Balance				
	Interest Rate	$500,000	$750,000	$1,000,000	$1,250,000	$1,500,000
HK Government Bonds	1.52%	$2,306	$3,459	$4,612	$5,765	$6,918
US Treasury Bonds	2.42%	$2,553	$3,830	$5,107	$6,384	$7,660
Citi Pension Yield Curve	3.41%	$2,839	$4,258	$5,678	$7,097	$8,517
Variable Annuity	5.25%	$3,387	$5,080	$6,774	$8,467	$10,161

Note: The annual income is determined with US MP-2014 Mortality Table and MP-2015 Mortality Improvement Scale and the corresponding interest rate.

The above summary showed a VLA can provide a18% and 19% larger annual income for male and female respectively over the retirement lifetime compared to a FLA using the Citigroup Pension Yield Curve. Taking into account the possibility of a 10% to 15% downside annual income adjustment for VLA, the adjusted annual income is still larger than FLA payments.

Participation in the group annuity scheme should be automatic with an opt-out option to have more effective pooling of healthy and less healthy retirees. US 401(k) plan studies, for the years 2013 to 2015, showed the automatic participation with op-out option has 88% to 91% participation rates compared to 60% to 70% for voluntary participation. A standard form of annuity payment guaranteeing 15 years of payments or total payment equal to the account balance at retirement can assure retirees that early demise would not result in a total loss of the account balance. The group annuity scheme can allow retirees to have their MPF balance in both fixed and variable annuity, instead of one or the other.

With the MPF balance likely be less than the needed lump sum value for generating retirement income replacement, it would be beneficial to permit MPF participants to include personal savings/ investments along with the MPF balance to convert to an annuity income.

The interest rate development process for the MPF group annuity scheme does not have to invest in US investments. They are used as possible investment choices to illustrate the retirement income generated under FLA and VLA.

Conclusion

MPF participants need to have higher pre-retirement investment returns of 5% to 6% to accumulate a lump sum at retirement to generate a reasonable level of lifetime income. The MPF retirees can form a group annuity scheme to obtain higher investment returns and manage longevity risk that is difficult to do on their own.

In The Ascent of Money: A Financial History of the World, Niall Ferguson wrote about risk management using hedging

> "This financial revolution has effectively divided the world in two: those who are (or can be) hedged, and those who are not (or cannot be). You need money to be hedged. That means that most big corporations can afford to be hedged . . . . By comparison, most ordinary households cannot afford to hedge at all and would not know how to even if they could."

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Market Update

Revised MPF Guidelines

The Mandatory Provident Fund Schemes Authority (MPFA) has issued 9 sets of revised Guidelines in October 2017:

Guidelines on Application for Approval as Trustees and Application for Approval as Controllers of Approved Trustees (Guidelines I.1)
Guidelines on Application for Registration of Provident Fund Schemes (Guidelines I.2)
Guidelines on Eligible Insurers (Guidelines I.4)
Guidelines on Application for Approval of Pooled Investment Funds (Guidelines I.6)
Guidelines on Annual Statements of Approved Pooled Investment Funds (Guidelines II.5)
Guidelines on Reserving Standards for Investment Guarantees (Guidelines III.9)
Guidelines on Election for Transfer of Accrued Benefits (Guidelines IV.3)
Guidelines on MPF Intermediary Registration and Notification of Changes (Guidelines VI.1)

On 26 June 2017, the relevant provisions of the Insurance Companies (Amendment) Ordinance 2015 commenced operation to enable the newly established Insurance Authority to take over the statutory functions of the Office of the Commissioner of Insurance to regulate insurance companies. Moreover, the Insurance Companies Ordinance and the Insurance Companies (Determination of Long Term Liabilities) Regulation were renamed as the Insurance Ordinance and the Insurance (Determination of Long Term Liabilities) Rules respectively. The commencement of operation of those provisions has entailed some simple amendments to eight sets of MPF Guidelines, i.e. Guidelines I.1, I.2, I.4, I.6, II.5, III.9, VI.1 and VI.3. In addition, some housekeeping amendments and refinements have been made to the eight sets of MPF Guidelines.

Guidelines on Annual Returns to be Delivered by Registered Intermediaries (Guidelines VI.3)

The Appendix to Annex C to Guidelines IV.3 contains a list of approved trustees and MPF schemes (the List) for scheme members to elect for the purposes of consolidation of MPF personal accounts. As a result of the change of the names of a trustee and two MPF schemes, the List and paragraph 7 of Guidelines IV.3 have been amended to reflect the relevant changes and the effective date of the revised Guidelines. Details of the changes are set out below:

(i) Change of name of a trustee

Previous name of trustee	New name of trustee
FWD Pension Trust Limited	Sun Life Pension Trust Limited

(ii) Change of names of two MPF schemes

Previous name of MPF scheme	New name of MPF scheme
FWD MPF Master Trust Basic Scheme	Sun Life MPF Basic Scheme
FWD MPF Master Trust Comprehensive Scheme	Sun Life MPF Comprehensive Scheme

Copies of the revised Guidelines can be downloaded from the MPFA's website at www.mpfa.org.hk.

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Network	Candidates	Placements	Consultants
77,000	24,000	1,700	41

Asian Market Opportunities

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HKD1M – HKD1.3M

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HKD50K - HKD75K

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Sharon Yeun

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Events Highlights

Joint Regional Seminar 2017 (Taipei), 31 July - 1 August

Joint Regional Seminar (Hong Kong), 2 August

Mr. Kevin Lee, ASHK President

Mr. Craig Turnbull, Standard Life Investments

Dr. Hector Wong, Swiss Reinsurance

Mr. Dave Cosentino, EY

Ms. Pauline Cheung, EY

Mr. Dion Heijnen, Willis Towers Watson

Mr. Paul Manson, Moody's Analytics

Mr. Ken Liang, Moody's Analytics

Mr. James Lin, EY

Mr. Dustin Ball, EY

Mr. Lai Jiang Bin, HSBC Insurance

Mr. Simon Lam, ASHK Vice President

Mr. Roddy Anderson, MC

Events Highlights

ASHK Pension Seminar (Hong Kong), 6 September

Mr. Gary Lee, Chairperson of the ASHK Pension & Employee Benefits Committee and Ms. Janet Li, Vice Chairman of the Hong Kong Retirement Schemes Association

Mr. Dustin Ball & Mr. James Lin
EY

From left to right: Mr. Stuart Leckie, OBE, JP, Stirling Finance Ltd, Ms. Janet Li, Willis Towers Watson, Mr. Alan Liu, Hong Kong Housing Society, and Mr. Steve Chiu, Institute of Financial Planners Hong Kong

From left to right: Ms. Celine Ng Tong, Mercer, Dr. York Chow, GBS, SBS, MBE, JP, AIA, Mr. Alex Lam, Hong Kong Patients' Voices, Ms. Luzia Hung, Manulife and Mr. Sam Yeung, Munich Re

Joint ASHK and IAAust University Workshop at HKU, 22 September

Ms. Kitty Chan,
Actuaries Institute Australia

Ms. May Chun,
Prudential Corporation Asia

Mr. Fred Ngan,
Coherent Capital Advisors Ltd and Seasonalife Ltd

Mr. Andrew Tang,
Manulife Asia

Mr. Ben Ng,
Chubb Life Hong Kong

Mr. William To,
RGA Reinsurance

Ms. Olivia Yeung,
RGA Reinsurance

Events Highlights

ASHK IFRS Seminar (Hong Kong), 11-12 September


Mr. Peter Duran, ASHK Professional Matters Committee Chairperson


Mr. William Horbatt, Actmasol


Mr. Syed Haider, KPMG


Mr. Tze Ping Chng, Ernst & Young


Mr. Benjamin Lovelock, PricewaterhouseCoopers


Mr. Michael Lockerman, PricewaterhouseCoopers


Mr. Chris Hancorn, PricewaterhouseCoopers


Mr. Eric Lu, Deloitte


Mr. Darryl Wagner, Deloitte Consulting LLP


Mr. Steve Cheung, Ernst & Young Advisory


Mr. Jeremy Menzies, RGA


Mr. Paul Melody, KPMG


Mr. David Ogloza, Deloitte

Events Highlights

ASHK Professionalism Course, 27 September

Mr. Nathan Dentice, ASHK Honourary Legal Advisor

Mr. Nathan Dentice, ASHK Honourary Legal Advisor and Mr. Roddy Anderson, ASHK Professional Matters Committee Member and Past President

Mr. John Williamson, ASHK Professional Matters Committee Member

Ms. Cathy Lin, ASHK Professional Matters Committee Member

Mr. Thomas Tang, ASHK Professional Matters Committee Member

ASHK Extraordinary General Meeting (EGM), 27 September

Mr. Simon Lam, ASHK Vice President chairing the ASHK EGM

Events Highlights

ASHK Healthcare Seminar, 13 October

Mr. Sam Yeung, ASHK Health Committee Chairperson

Dr. Christian Wards, AIA Group

Ms. Elaine Chan, Zurich Insurance

Dr. York Chow, GBS, SBS, MBE, JP AIA Hong Kong

Mr. Bob Charles, CXA

Ms. Celine Ng Tong, Mercer

Ms. Rebecca Zhang, SCOR

Mr. Pang Chye, Milliman

Dr. Hugo Tan, Novartis Pharmaceuticals

Panel Discussion on "Managing a Healthy Healthcare Ecosystem" (From left to right: Ms. Orchis Li, Ms. Elaine Chan, Dr. Christian Wards and Dr. York Chow)

Mr. Sam Yeung, ASHK Health Committee Chairperson presenting token of appreciation to sponsors: Silver Sponsor – CIGNA (Left) and Booth Sponsor – RGA (Right)

Events Highlights

ASHK Evening Talk, 17 October

Mr. Oliver Howell, Marsh

Mr. Kegan Chan, Marsh

ASHK Actuarial Circle, 25 October

Mr. Simon Lam, ASHK Vice President giving an opening speech

Special thanks: Casualty Actuarial Society (Event sponsor)

ASHK Text Mining Workshop, 27 October

Ms. Trinity Pong, ASHK Non-Life Committee Chairperson

Ms. Trinity Pong, ASHK Non-Life Committee Chairperson and Mr. Colin Priest, Data Robot

Ms. Trinity Pong, ASHK Non-Life Committee Chairperson and Mr. David Menezes, Peak Reinsurance

Upcoming Events

Date	Event
27 Nov 2017	SOA APC[1], Hong Kong
28 Nov 2017	ASHK Evening Talk Speakers: Chris Hancorn, PricewaterhouseCoopers and Jenny Jiang, Morgan Stanley Topic: IFRS 17 – Beyond Implementation, Towards Commercial Implications
12 Dec 2017	ASHK AGM
12 Jan 2018	SOA APC, Hong Kong (*TBC*)
22 Jan 2018	SOA APC, Beijing (*TBC*)
30 Jan 2018	ASHK Evening Talk Speaker: John Eng Topic: Investment and Longevity Pooling and MPF Annuitisation
Mar 2018	SOA APC, Hong Kong
Mar 2018	SOA APC, Shanghai
May 2018	SOA APC, Hong Kong
May 2018	SOA APC, Beijing
10-11 May 2018	IFoA Asia Conference, Bangkok (Link: https://www.actuaries.org.uk/learn-and-develop/events-calendar/asia-conference-2018)
16-19 Sep 2018	Asian Actuarial Conference (AAC), Hong Kong Theme: Redefining the New Insurance World Venue: Kerry Hotel, Hong Kong

[1] More details of SOA APCs can be found on the SOA website: https://www.soa.org/education/exam-req/course-info/edu-apc-course-info.aspx.

Make time for these!

Membership Update

New Members

Fellow

Albert Pak-Chuen Li	Willis Towers Watson	Fellow [FSA (2000)]
Barnaby Jinhao Liu	Swiss Reinsurance Company Ltd	Fellow [FSA (2017)]
Ada Nga-Yin Yu	Fubon Life Insurance (Hong Kong) Company Limited	Fellow [FSA (2012)]

Associate

Stephanie Tze-Ling Chow	Ernst & Young	Associate [AIAA (2017)]
Justin Shing-Him Tse	Manulife Financial	Associate [ASA (2016)]
Tu Yizi	Munich Reinsurance Company Hong Kong Branch	Associate [ASA (2016)

Student

Kwok-Fai Chan	- -	Student (Polytechnic University*)
Beryl Mei-Hung Ho	Generali Life Hong Kong	Student (SOA Student)
Becky Pei Ling	Ernst & Young	Student (SOA Student)

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Membership Advancement

Fellow

Wyatt Wai-Shan Wong	Cigna Worldwide Life Insurance	Fellow [FSA (2017)]

Associate

Betty Zixuan Xu	HSBC Insurance (Asia) Limited	Associate [ASA (2017)]

Membership Update

Fellow

Vincent Hing Yu — Willis Towers Watson — Fellow [FSA (2008)]

Reinstated Member

Actuaries on the move

Christian Bettels
Eddie Chan
John Chan
Bob Charles
Gary Cheng
Ann Cheung
Thomas Cheung
Ivy Chiu
Kelvin Choi
Enoch Chow
Jiong Du
Eric Ho
Betty Lee
Anthony Leung
Michael Leung
Florence Li
Norris Li
Alan Oates
Richard Payne
Edmund Tsang
Katrien Verwilst
Davey Wong
Wilson Wu
Grace Yan
Sam Yeung

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We welcome members' contribution to the "Hong Kong Actuaries" Newsletter, especially, the Feature Articles and Knowledge Sharing sections. If you have written any inspiring articles or have read any interesting articles from other actuarial organisation(s), please feel free to let us know. We will try to reprint the article(s) in our newsletter to share with our members.

For the above issues, please e-mail your articles or views to Rachel Chu by email at rachelchu@bluecross.com.hk or ASHK Office by email at info@actuaries.org.hk. Publication of contributions will be at editor's discretion.