Actuarial Society of South Africa

EXAMINER'S REPORT

17 October 2025

Subject F201 – South African Health and Care Fellowship Applications

Examiner's Comments

This examiner's report is not intended to represent a model or typical response that candidates are expected to replicate. Instead, it is designed to offer an expanded view that includes a range of potential correct answers and valid approaches.

This approach aims to assist future candidates in their preparation by serving as a comprehensive resource, outlining alternative acceptable statements that examiners would recognise as correct. By doing so, the report functions as a valuable study aid, broadening candidates' understanding of the subject matter and enhancing their ability to tackle a variety of question types effectively.

QUESTION 1

Question 1 asked candidates to demonstrate their understanding of the actuarial pricing of various solutions in the medical scheme and medical insurance markets. This included traditional scheme aspects but also the potential options from the insurance industry. The better performing candidates were able to contrast the different mechanics of the features of the solutions and how they were priced.

Question 1(i)

Few candidates were able to make points of significant difference and only manged to isolate the main points without looking at the specific differences. A number of candidates went into too much detail on the product and not the pricing aspects.

Below is a description of the material differences in the actuarial pricing approach of **Set 1 (Low-Cost Benefit Option)** and **Set 2 (Gap Cover)** as it pertains to their respective **benefit design**.

Purpose

A low-cost benefit option (LCBO) is designed as an entry-level primary cover that funds a defined basket of essential healthcare services at an affordable contribution, whereas gap cover is a supplementary top-up that reimburses shortfalls between provider charges and medical-scheme reimbursements.

For example: An LCBO funds GP consultations and basic medicines directly; a gap policy pays the difference when a surgeon bills 300% of tariff and the scheme pays only 100%.

Dependency on a medical scheme

An LCBO is itself a medical-scheme option and operates as the first payer for covered services, while gap cover presupposes active medical-scheme membership and only responds after the scheme has adjudicated and paid.

Gap benefits are triggered by a scheme payment and evidenced shortfall; without the scheme transaction there is no "gap" to insure.

Scope of benefits

LCBO benefits are predefined entitlements (e.g., a number of GP visits, a pharmacy formulary, basic diagnostics, and PMB-aligned hospital access through DSPs), whereas gap cover benefits are event-driven indemnities limited to tariff shortfalls, co-payments, and sub-limit top-ups (typically in-hospital).

For example: LCBO may include unlimited network clinic visits; gap cover reimburses a R6,000 endoscopy co-payment.

Day-to-day versus catastrophic emphasis

LCBOs typically cover day-to-day primary care and tightly curated hospital benefits to preserve affordability, while gap cover concentrates on in-hospital or high-cost events where specialist billing exceeds scheme rates.

Justification: The risk profile of LCBO claims is high-frequency/low-severity; gap claims are lower-frequency/higher-severity.

Network design and managed protocols

LCBOs rely heavily on restricted provider networks, formularies, and pre-authorisation to control utilisation and unit costs, whereas gap cover is generally provider-agnostic because it reimburses after the fact based on a shortfall calculation.

For example: An LCBO may require members to use a specified GP network and DSP hospitals; the gap policy pays the shortfall regardless of which specialist was used, subject to policy terms.

PMB interaction and first-payer rules

LCBOs are structured to honour PMB coverage (often via DSP arrangements and clinical protocols), while gap cover does not replace PMBs but may reimburse any residual member liability above the scheme's PMB payment.

Gap benefits cannot duplicate the scheme's statutory responsibility; they only indemnify members for amounts the scheme legitimately does not pay.

Basis of reimbursement

LCBOs reimburse on contracted or scheme tariff schedules and may include fixed fees for primary care bundles, while gap cover reimburses the difference between provider billing and the scheme tariff (and defined co-payments), often subject to a policy-wide annual limit.

For example: If a specialist bills R12,000, the scheme allows R8,000, and the member faces a R4,000 co-pay, the gap policy reimburses the R4,000 (if covered).

[Question 1(i): Total 8]

Question 1(ii)

There were very high-level answers provided with few candidates identifying the detailed differences in the arrangements. There were very generic comments made. A few candidates talked to the balance of providing services with the profitability of the arrangements as well as the risk appetite based on the direction of the arrangement (scheme or hospital).

Below is a description of the material differences in the actuarial pricing approach of **Set 3 (Capitation with Profit Share)** and **Set 5 (Global Fee Arrangement)** as it pertains to their respective **profitability considerations**.

Primary risk bearer

Under capitation with profit share, the provider (or MCO) assumes population utilisation risk for the in-scope services, while the payer retains risk only for services outside scope, so provider profit arises when realised PMPM costs are below the capitated rate.

Structure and timing of upside

Capitation profit is typically earned gradually over the contract term and is often shared via a savings pool or withhold released after quality and experience tests, so distributable profit lags and depends on measured outcomes.

Variance drivers and forecast risk

Capitation profitability is most sensitive to population mix, baseline morbidity, and utilisation trends, whereas global fee profitability is most sensitive to episode complexity, complication rates, and length of stay.

Global fee margin mechanics

Under a global fee, the hospital group's profit is the difference between the fixed episode price and actual all-in episode cost, so margin depends on pathway discipline, theatre efficiency, consumables/implant choices, and discharge planning.

Scope definition and leakage management

Capitation profitability relies on tight service definition and leakage control to out-of-network or out-of-scope services, while global fee profitability relies on a precise bundle specification (pre-op to post-op window, included professionals, and readmission "warranty") to avoid cost creep.

Quality gates and guardrails on profit

Both models commonly attach quality thresholds that condition or claw back profits, but in capitation these are often population-level (e.g., preventable admissions, chronic control metrics), whereas in global fees they are episode-level (e.g., no-pay for never events, readmission penalties).

Stop-loss and outlier protections

Capitation contracts often include catastrophic case carve-outs to stabilise provider margins, while global fees may include case-level outlier payments once costs exceed a threshold to limit extreme losses.

Inflation and trend management

Capitation profitability is exposed to medical inflation and utilisation trend between rate-review cycles, so escalators and periodic repricing are critical, while global fee profitability is exposed to input price shocks (e.g., implants, drugs) unless the bundle has indexed pass-throughs.

Operational levers to create surplus

Capitation surplus is created by reducing avoidable utilisation (care coordination, primary care access, telehealth, formulary discipline), whereas global fee surplus is created by reducing unit costs per episode (OR turnover time, protocols, day-case shifts, standardised implants).

Volume and scale effects

Capitation profitability scales with member months, smoothing random variation as panel size grows, while global fee profitability scales with procedure volumes, improving fixed-cost absorption and learning-curve efficiency.

[Question 1(ii): Total 8]

Question 1(iii)

Generally, this was not answered well with little depth in the development the answers. The answers reinsurance part were focussed on the regulations / legislative aspects and not the pricing. Some of the better candidates did indicate that reinsurance was the choice of the insurer where gap was more member selected.

Below is a description of the material differences in the actuarial pricing approach of **Set 2 (Gap Cover)** and **Set 4 (Quota Share Treaty on Accident Cover)** as it pertains to their respective **regulatory requirements**.

Regulatory framework and governing acts

Gap cover is classified as a short-term insurance product under the Short-Term Insurance Act and falls under the Financial Sector Regulation framework, overseen by the Prudential Authority and FSCA. By contrast, a quota share treaty is a reinsurance contract governed by the Insurance Act and reinsurance regulations, with oversight focusing on prudential standards for licensed insurers and reinsurers.

Interaction with the Medical Schemes Act

Gap cover is directly affected by the Demarcation Regulations, which demarcate what insurers may and may not cover so as not to encroach on the business of medical schemes. It may only reimburse co-payments, tariff shortfalls, or defined non-scheme costs, and it cannot duplicate Prescribed Minimum Benefits.

Quota share treaties, in in this case, operate entirely outside the Medical Schemes Act because they reinsure accident cover business, not medical scheme benefits.

The regulator protects medical schemes' risk pools by limiting the scope of gap cover, while reinsurance treaties face no such constraint.

Capital and solvency requirements

Gap cover insurers must hold minimum capital and maintain solvency ratios appropriate for short-term medical expense insurance, typically based on premium and claims risk. Reinsurers under a quota share treaty must meet stricter prudential requirements under SAM, such as capital adequacy, technical provisions, and reinsurance credit risk allowances.

Reporting and compliance obligations

Gap cover insurers must produce statutory returns, treat-customer-fairly (TCF) reports, and product disclosure statements for policyholders. Reinsurers must file detailed prudential returns, stress tests, and risk management frameworks with the Prudential Authority.

Gap cover regulation is consumer-protection heavy, while reinsurance regulation is prudential-solvency heavy.

Contract approval and oversight

Gap cover policies are standardised retail products, which means policy wording, exclusions, and benefit limits must be filed and are subject to FSCA scrutiny. Quota share treaties are bilateral contracts between insurer and reinsurer; they are not consumer-facing, so there is no FSCA pre-approval of wording, but regulators may review treaties during prudential audits to assess ceded risk.

For example: A gap cover product with an annual limit of R185,000 must be disclosed in marketing material; a 50% quota share treaty need not be disclosed publicly but must be recorded in the insurer's risk transfer register.

Cross-border restrictions

Gap cover can only be written by insurers licensed in South Africa, ensuring local market conduct supervision. Quota share treaties can involve foreign reinsurers, provided they are registered as "approved" reinsurers by the Prudential Authority.

Market conduct versus prudential supervision

For gap cover, market conduct regulation dominates: fair disclosures, policyholder protection rules, claims turnaround standards, and treating customers fairly. For quota share reinsurance, prudential regulation dominates: ensuring the insurer and reinsurer remain solvent, that reinsurance truly transfers risk, and that counterparty exposures are appropriately managed.

For example: A gap cover complaint goes to the Ombudsman for Short-Term Insurance; a quota share capital breach is escalated by the Prudential Authority.

[Question 1(iii): Total 8]

Question 1(iv)

Candidates were able to explain the need for networks for the LCBO and contrast with that of the hospital. They were also able to explain the difference in the level of care that each arrangement was targeted at (primary vs secondary / tertiary). However, there was not enough depth on the pricing considerations, so the question was not answered well apart from a few candidates.

Below is a description of the material differences in the actuarial pricing approach of **Set 1 (Low-Cost Benefit Option)** and **Set 5 (Global Fee Arrangement)** as it pertains to their respective **provider networks**.

Nature of the network relationship

A low-cost benefit option (LCBO) uses broad primary care networks of contracted general practitioners, clinics, and pharmacies to ensure members can access essential services affordably. In contrast, a global fee arrangement creates a narrow network around a specific hospital group and its affiliated specialists, with access usually limited to those facilities for defined procedures.

For example: An LCBO may contract 800 GPs nationwide for basic consultations, whereas a global fee for hip replacements ties members to one hospital chain and its orthopaedic teams.

Purpose of network design

LCBO networks are primarily designed to control day-to-day costs and enforce care protocols by limiting members to designated providers. Global fee networks are designed to bundle all providers involved in an episode of care into a single payment structure, ensuring coordination and efficiency for a defined clinical pathway.

LCBO networks preserve affordability at the population level, while global fee networks preserve cost predictability at the episode level.

Level of provider integration

LCBO networks are contractually affiliated but not necessarily integrated across disciplines, with GPs, pharmacies, and labs often contracted separately. Global fee networks are tightly integrated, requiring coordination among hospital, surgeon, anaesthetist, and allied health professionals to deliver within a single fee.

For example: In an LCBO, a GP visit and a lab test are reimbursed separately but at negotiated rates; in a global fee, the hospital, surgeon, and anaesthetist all share the same R50,000 case payment.

Access rules and patient choice

In an LCBO, members must use in-network primary care providers or risk reduced/no cover; however, the network usually offers multiple access points within a geographic area. In global fees, members may have no choice of provider beyond the contracted hospital group and its appointed teams.

LCBO designs are about managed choice, while global fees are about mandated exclusivity for the procedure.

Impact on provider incentives

LCBO networks incentivise providers through fixed tariffs, formularies, and utilisation rules, which reward efficiency by keeping them within scheme rules. Global fee arrangements incentivise providers by sharing a lump-sum payment, which rewards multidisciplinary collaboration to avoid complications and reduce costs.

For example: A GP in an LCBO is paid R300 per consultation with a formulary restriction on antibiotics; under a global fee, the hospital and surgeon collaborate to discharge the patient on day three instead of day five to preserve their margin.

Risk of leakage and out-of-network care

In an LCBO, leakage occurs if members seek care outside the network, leading to either denied claims or higher co-payments. In a global fee, leakage occurs if non-contracted specialists or facilities are brought into the care episode, potentially breaking the bundle and creating disputes over cost allocation.

Both designs must manage leakage, but the form differs - individual member behaviour under LCBO, versus multidisciplinary coordination under global fees.

[Question 1(iv): Total 7]

Question 1(v)

In general, candidates focused on the differences in the underwriting conditions of the two solutions and tended to rely on the limitations from the Medical Schemes Act (MSA) at an individual member level while talking to the overall aspect of the reinsurance market. There was time wasted going into the detail under the MSA rather than the considerations of the pricing aspects.

Below is a description of the material differences in the actuarial pricing approach of **Set 1 (Low-Cost Benefit Option)** and **Set 4 (Quota Share Treaty on Accident Cover)** as it pertains to their respective **underwriting practices**.

Nature of underwriting decision

For a low-cost benefit option (LCBO), underwriting is at the individual member level, focusing on eligibility, waiting periods, and late-joiner penalties within the Medical Schemes Act. In contrast, for a quota share treaty, underwriting occurs at the portfolio level, assessing the insurer's accident business experience and the quality of underwriting already performed by the cedant.

Example: An LCBO applicant may face a 3-month general waiting period; a reinsurer underwriting a quota share treaty evaluates the cedant's accident claims ratio trends before agreeing to reinsure 50%.

Regulatory constraints on underwriting

LCBO underwriting is constrained by the Medical Schemes Act, which prohibits risk rating and requires open enrolment and community rating. Quota share treaties, by contrast, are regulated under the Insurance Act and SAM prudential standards, which allow reinsurers to negotiate risk terms freely with insurers, subject only to prudential oversight.

Risk selection tools

LCBOs cannot decline membership based on health status; instead, they rely on waiting periods, benefit limitations, and designated service providers to manage adverse selection. Reinsurers in a quota share treaty select risks by adjusting ceded percentages, exclusions, or pricing loadings based on the cedant's underwriting practices and exposure mix.

Example: An LCBO may impose a 12-month waiting period on pre-existing hip conditions; a reinsurer may exclude motorbike accidents from the quota share if loss experience is adverse.

Data required for underwriting

LCBO underwriting is data-light, requiring only demographic details, membership history, and proof of prior medical scheme cover. Quota share underwriting is data-heavy, requiring historic claims triangles, exposure volumes, underwriting guidelines, and catastrophe modelling outputs from the cedant.

Risk pooling and diversification

LCBO underwriting implicitly relies on the large pool of scheme lives and risk equalisation across healthy and unhealthy members. Quota share treaties rely on risk diversification across insurers, portfolios, and geographies, with reinsurers balancing accident exposure across multiple cedants.

For example: An LCBO spreads diabetic risk across all members; a reinsurer spreads motor accident risk across multiple insurers in SA and abroad.

Impact of underwriting on pricing

LCBO underwriting impacts contribution setting, as actuaries must allow for the impact of open enrolment and adverse selection when determining the contribution level. For a quota share treaty, underwriting drives the ceding commission, reinsurer margin, and percentage share of risk, all of which are embedded in the treaty pricing.

For example: An LCBO contribution of R850 p.m. must assume some level of anti-selection because sick members cannot be declined; a reinsurer may charge an additional 5% margin on top of expected loss cost if the cedant's underwriting controls are weak.

Contractual versus statutory underwriting levers

LCBO underwriting levers are statutory and uniform, prescribed by the Medical Schemes Act, leaving little room for individual tailoring. Quota share underwriting levers are contractual and negotiable, with reinsurers tailoring terms to reflect their appetite, e.g., sliding scale commissions, event limits, or exclusions.

[Question 1(v): Total 7]

Question 1(vi)

Candidates talked to some of the risk sharing under the capitation arrangement and the product differences but did not go into much detail on the pricing aspects.

Below is a description of the material differences in the actuarial pricing approach of **Set 2 (Gap Cover)** and **Set 3 (Capitation with Profit Share)** as it pertains to their respective **competitive dynamics**.

Nature of the product market

Gap cover operates in the supplementary insurance market, where insurers compete on product design, premium affordability, and marketing appeal to individuals already belonging to medical schemes. Capitation with profit share operates in the provider contracting and managed care market, where competition centres on efficiency, clinical quality, and the ability to offer lower costs to medical schemes or employers.

For example: Gap cover insurers advertise directly to consumers through brokers; managed care organisations compete for scheme contracts by promising savings on hospital admissions.

Target customers

Gap cover targets individual consumers seeking financial protection against tariff shortfalls and co-payments, while capitation contracts are sold to medical schemes or employers who need predictable healthcare costs and aligned provider incentives.

Basis of differentiation

Gap cover providers differentiate through higher benefit limits, broader coverage of co-pays, faster claims settlement, and value-adds (e.g., premium waivers). Capitation providers differentiate on their ability to manage utilisation, provider network breadth, quality outcomes, and willingness to share savings.

Example: One gap cover may cover up to 500% of scheme tariffs; one capitation provider may guarantee savings of 12% on hospital admissions by using a closed hospital network.

Regulatory influences on competition

Gap cover competition is constrained by the Demarcation Regulations, which limit benefit scope and impose maximum annual benefit caps, leading to relatively homogeneous products. Capitation

competition is shaped by the Medical Schemes Act and scheme governance, allowing more innovation in contracting models such as shared savings or outcomes-based reimbursement.

Price sensitivity and switching

Gap cover members are price-sensitive retail consumers who can switch annually between insurers if contributions rise. Capitation clients are institutional buyers (schemes/employers), where switching requires strategic procurement processes, contract renegotiations, and provider disruption.

Market maturity and concentration

Gap cover is a highly competitive, commoditised retail market with many insurers offering similar products and fighting for distribution through brokers. Capitation is a more specialised market with relatively few established managed care organisations, meaning competition is based more on technical credibility, data analytics, and proven outcomes than on mass marketing.

Growth dynamics

Gap cover growth is tied to medical scheme contribution inflation, which increases shortfalls and drives consumer demand for protection. Capitation growth is tied to schemes' strategic push for cost containment, especially in high-inflation environments where schemes look for alternative provider reimbursement models.

[Question 1(vi): Total 6]

Question 1(vii)

Candidates identified that the global fee would be affected by specific events or procedures while the quote share would cover the events deemed accidents. Furthermore, that the quota share would be costed on the population at risk while the global fee would be specific to the components on the procedure. There was not a lot of depth in the answers provided.

Below is a description of the material differences in the actuarial pricing approach of **Set 4 (Quota Share Treaty)** and **Set 5 (Global Fee Arrangement)** as it pertains to their respective **pricing structure**.

Unit of Pricing

In a quota share treaty, the reinsurer's pricing is structured as a fixed proportion of the insurer's premium income, usually expressed on a per member per month basis. The reinsurer receives the same proportion of premium and pays the same proportion of claims, regardless of the underlying member profile.

By contrast, a global fee arrangement is structured on a per procedure or per episode of care basis, with a fixed bundled amount payable for each defined clinical event, such as a hip replacement or a caesarean section.

Segmentation by Member Type

In the case of a quota share treaty, any segmentation by main member, adult dependant, or child dependant is inherited directly from the insurer's contribution table. Where the cedant differentiates by member type or age, the reinsurer automatically shares proportionally in that segmentation.

Global fee arrangements, however, apply the same fee regardless of whether the patient is a principal member, a dependant, or a child. Only in rare circumstances, such as a paediatric or geriatric variant of a procedure, would the fee differ.

Segmentation by Product or Income Band

Quota share treaties also reflect segmentation by product type or income band if the insurer's pricing table contains such splits. Global fee arrangements, on the other hand, do not recognise product splits or income bands. The pricing structure is instead determined by clinical pathway, with each line item in the tariff schedule corresponding to a particular procedure, such as a hip replacement or an appendectomy.

Payment Frequency and Format

Another important distinction lies in the frequency and format of payments. Quota share treaties are typically settled on a monthly or quarterly basis, with the reinsurer receiving its proportional share of the aggregate premiums collected by the insurer. This structure is inherently per member per month based. In contrast, global fee arrangements are invoiced and paid per episode of care, usually after the patient has been discharged and the procedure has been completed. This shifts the basis of pricing from ongoing membership to individual cases.

Pricing Transparency

The transparency of the pricing structures also differs significantly. Quota share treaties operate entirely behind the scenes between the insurer and reinsurer, with members having no visibility of the proportional share. Global fee arrangements, by contrast, are explicit and auditable, as they are codified in tariff schedules that can be compared across providers and monitored for consistency.

Simplicity versus Granularity

Quota share treaties are simple in that a single percentage applies across the entire portfolio. However, the underlying contribution table of the insurer may contain multiple splits by member type, age, or income. Global fee arrangements are more granular, as they require a detailed schedule of bundled fees for different procedures. This granularity allows for precision in cost management, but also requires significant negotiation and ongoing maintenance.

Predictability of Revenue

From a predictability perspective, quota share treaties provide reinsurers with stable revenue flows that move in proportion to premium income, although profitability depends on the actual claims experience. Global fee arrangements, on the other hand, provide providers with predictable reimbursement per case, but profitability depends on managing the length of stay, avoiding complications, and efficiently coordinating resources within the fixed bundled fee.

[Question 1(vii): Total 6]

[Question 1: Total 50]

QUESTION 2

This question evaluates a candidate's expertise in conducting actuarial valuations for post-retirement medical aid (PRMA) liabilities under IAS 19, with a specific focus on setting financial assumptions and understanding their impacts.

Candidates are expected to showcase their ability to perform experience investigations, refine assumptions, and incorporate root-cause analyses to address discrepancies. Additionally, the question tests candidates' ability to assess the implications of various scenarios on liability valuation and employee outcomes.

Examiners expect comprehensive and well-reasoned answers that blend technical accuracy with professional insight, addressing the financial and human aspects of the scenarios provided.

Question 2(i)

This sub-question examines the candidate's ability to identify and explain the key experience investigations required to set robust and appropriate financial assumptions for the valuation of PRMA subsidy liabilities under IAS 19.

Well-prepared candidates are expected to demonstrate a systematic approach to selecting, analysing, and applying relevant data sources and methodologies. Some candidates did not make effective use of their time and added items that were unrelated to the question being asked.

Investigation of the Bond Yield Curve Movement

The discount rate assumptions for *Protea Business Solutions Pty Ltd (PBS)* have historically been based on fixed-interest government bond yields, which in turn influence the discount rate used in the liability valuation.

The following steps would be taken to investigate the movements in the bond yield curve:

Step 1: Review of the Bond Yield Curve at Key Dates:

As at 31 December 2022: The bond yield curve will be assessed to understand the levels of government bond yields at that time. This includes reviewing long-term government bond yields, which typically serve as the benchmark for discount rate assumptions.

As at 31 December 2023: Analyse the bond yield curve movement during 2023, especially considering the escalation of prime interest rates throughout the year. This would have impacted the long end of the bond yield curve as it took time for the yield curve to adjust to the higher interest rates.

As at 31 December 2024: The yield curve's shape and movement at the end of 2024 should be scrutinized, noting any shifts in response to market conditions such as economic policies, inflation expectations, and interest rate hikes.

Step 2: Economic Factors Driving Bond Yield Movements:

The following economic factors need to be considered in relation to the bond yield curve and its movement:

Prime Interest Rate Increases (2023): The escalation of the prime interest rates throughout 2023 would likely have caused upward movements in short-term and long-term bond yields. The delayed effect of this increase on bond yields should be analysed, as interest rate hikes typically have a lagged impact on bond yields.

Lagging Impact of Interest Rate Hikes: Interest rate hikes from the South African Reserve Bank in 2023 likely had a delayed effect on the bond yield curve. It is important to consider whether the yields on government bonds (particularly at the long end of the curve) moved upwards or remained stable following the rate hikes in 2023.

Market Reactions to Monetary Policy and Macroeconomic Variables: Macroeconomic factors, such as inflation expectations and monetary policy responses, would influence bond yields, especially on the longer end of the yield curve. This could include how market participants react to inflation data, economic growth forecasts, and fiscal policies. In 2024, changes in these factors could continue to push the yield curve upward or cause it to stabilize.

South African USD Yields and Emerging Market Conditions: South African USD yields saw a marked rise in 2024, reflecting broader trends in global emerging markets, where USD-denominated yields have outperformed local currency yields. This may have contributed to upward pressure on bond yields in South Africa, potentially impacting PBS's discount rate assumption.

Increased Market Risk Factors: The heightened risk perceptions due to factors such as load shedding, and the upcoming elections could have influenced investor sentiment, causing a rise in bond yields as investors demanded higher returns to compensate for these risks. These factors likely impacted the long-term yields more significantly, affecting the shape of the yield curve.

Investigation of the Discounted Mean Term (DMT)

In addition to the bond yield curve, it is important to understand the movements in the Discounted Mean Term (DMT), which reflects the weighted average time until liabilities are settled.

As noted in the historical data, the DMT has reduced from 17 years (2022) to 14 years (2024), with a significant reduction in just one year. This change should not be assessed in isolation but must be investigated alongside demographic experience.

The DMT reduction should be accounted for by selecting the corresponding yield from the yield curve – the impact of which would be dependent on the shape of the yield curve.

General Inflation Assumption Experience Investigation

For PBS's PRMA subsidy liability valuation, the general inflation assumption is an essential component in determining the future cost of subsidies and benefits.

The general inflation assumption for 31 December 2025 will be based on an analysis of historical inflation trends, with a particular focus on the difference between the fixed-interest government bond yield curve and the index-linked government bond yield curve, which serves as a proxy for long-term inflation expectations. This approach reflects market expectations for future inflation as implied by bond yields.

To investigate the general inflation assumption, it is important to first examine the assumption history for the prior years (2022-2024) and the associated yields on both fixed-interest and index-linked government bonds:

Fixed-interest government bond yields: These are traditional bonds that pay a fixed rate of return to investors, and their yields reflect the nominal interest rates in the economy, which are influenced by both inflation expectations and real interest rates.

Index-linked government bond yields: These bonds are adjusted for inflation, meaning they provide a real return that is linked to changes in the inflation rate. The difference between the yields on fixed-interest and index-linked government bonds represents the market's long-term inflation expectations.

For each of the past years (2022-2024), the following steps would be taken:

Step 1: Comparison of Fixed-interest vs Index-linked Yields

Calculate the difference between the yields of fixed-interest and index-linked government bonds to estimate long-term inflation expectations. This difference can be thought of as the implied inflation rate and serves as the proxy for future inflation.

Step 2: Historical Inflation Trends

Review the historical inflation data from sources such as the South African Reserve Bank and Stats SA, alongside the bond market data, to assess whether the bond-implied inflation assumptions align with actual inflation trends. This will help to refine the assumption for 31 December 2025.

Contribution Inflation Assumption Experience Investigation

The contribution inflation assumption is a crucial component in the calculation of the PRMA subsidy liability, as it determines the future increases in medical scheme contribution costs, which directly impact PBS's future subsidy liabilities.

Contribution inflation typically exceeds general inflation due to factors such as rising healthcare costs, increased demand for medical services, and the introduction of new medical technologies and treatments as well as increases in utilisation of healthcare services above those implied by demand.

For PBS's PRMA subsidy liability valuation, the contribution inflation assumption is set by adding a margin on top of the general inflation assumption to reflect these factors.

This margin accounts for the difference between the general inflation rate (which reflects overall price increases in the economy) and the specific cost pressures associated with healthcare services and medical scheme contributions.

Investigating the Margin Above General Inflation

The investigation into this margin will include:

Size of the Margin: The historical margin between contribution inflation and general inflation has varied over the past few years, with a notable difference of around 1.5% in 2023 and 1.0% in 2024. The experience investigation will assess whether this margin has narrowed or widened over time and the factors contributing to any changes.

Escalation of Prime Interest Rates (2023): Interest rate hikes could have impacted healthcare costs indirectly, as medical schemes might raise their contribution rates in response to inflationary pressures in the economy. This could have resulted in a larger margin between general inflation and contribution inflation in 2023.

Healthcare Cost Drivers: The investigation will also consider factors specific to the healthcare sector, such as medical scheme benefit changes, hospital tariffs, the cost of new medical technologies, and the price of pharmaceuticals. These elements tend to rise faster than general inflation, often exacerbated by

demographic trends like an aging population, increasing chronic conditions, and higher demand for healthcare services.

Investigation of Medical Scheme Contribution Escalations

A key part of the contribution inflation investigation will involve reviewing the actual medical scheme contribution escalations in the market. This includes:

Medical Scheme Contribution Trends: Investigate the historical and projected contribution increases by major medical schemes in South Africa. For example, open medical schemes (which offer membership to the public) and restricted medical schemes (which are typically employer-sponsored) may have differing contribution escalation trends. Review data from the Council for Medical Schemes (CMS) or other regulatory bodies to assess the average escalation rates for medical scheme contributions over the past few years.

Industry-wide Trends: Assess how contribution increases in the broader medical scheme market compare to the general inflation rate and to the fixed-interest and index-linked government bond yield curves (as part of the inflation assumptions). If medical scheme contributions have been increasing at a rate significantly higher than general inflation, this will help justify a higher margin above general inflation for the 31 December 2025 contribution inflation assumption.

Benchmarking: The contributions of other companies or schemes in the healthcare sector, as well as any market-wide adjustments in healthcare insurance, should be reviewed to determine whether PBS's contribution inflation assumption is competitive and aligned with the market.

[Question 2(i): Total 10]

Question 2(ii)

This question assesses the candidate's ability to analyse historical trends and identify potential reasons for the understatement of contribution inflation in prior valuations. Candidates are expected to demonstrate critical thinking in evaluating the root causes of discrepancies and articulate how these insights can be applied to refine assumptions for future valuations. The answer should combine analytical precision with practical solutions, ensuring assumptions are both realistic and aligned with emerging experience.

Generally, this question was not answered well. Some candidates indicated that the timing of medical scheme increases would not be known at the time of setting the assumption and the scheme may have acted differently to historic trends. Some indicated that the assumption could have been based on industry trends and not that of the underlying medical scheme. Stronger candidates commented that there could have been a delayed Covid-19 impact, a deterioration of demographics and benefit structure that was unanticipated to drive the increase contributions.

Reasons for Understated Contribution Inflation

Misalignment in Inflation-Setting Methodology

The approach to estimating contribution inflation for PRMA liability valuations, as per IAS 19, differs fundamentally from the methodologies employed by medical schemes to adjust their contribution rates.

PRMA liability valuations typically utilise the yield curve differential between fixed-interest and index-linked government bonds to estimate long-term inflation and apply a margin for contribution increases due to increasing demand etc. This approach aligns with IAS 19 but does not mimic short-term CPI adjustments made by medical schemes.

Medical schemes base adjustments on recent CPI trends and add a margin for adequacy, as per APN 303 guidance. This difference can result in persistent variance between actual and expected rates. This may be unsustainable in the longer term and result in risk management, including benefit changes, to reduce future contribution increases and reverting to longer term assumptions.

Weighted Average Contribution Inflation Differences

The weighted average inflation depends on the distribution of members across benefit options and the inflation rates applied to each.

Variances arise from differences between expected and actual:

- **Membership Distribution:** Shifts in employee preferences or changes in employment patterns may alter the weighting of benefit options, impacting the aggregate inflation rate.
- **Benefit Option Increases:** Actual contribution increases for benefit options may deviate from expectations due to changing medical costs or scheme-specific factors.

Benefit Design Adjustments

Unanticipated changes in benefit structures, such as coverage enhancements or restrictions, may affect the contribution rates.

Adjustments based on emerging demographic trends or cost pressures (e.g., aging populations) might not have been fully anticipated in prior assumptions.

Incorporating Insights for the Valuation at 31 December 2025

Refining Inflation Assumption Methodology

Introduce a hybrid approach combining long-term yield curve differentials (for IAS 19 compliance) with short-term CPI trends used by medical schemes. This will improve alignment with real-world contribution adjustments.

Explicitly model the margin above inflation applied by medical schemes for contribution adequacy.

Dynamic Modelling of Membership and Contribution Distributions

Utilise detailed employee demographic data to better anticipate shifts in membership distribution across benefit options. Utilise claims cost curves by age and chronicity to estimate the impact of ageing and worsening demographic profile of the scheme based on historic trends.

Implement scenario analysis to evaluate the sensitivity of contribution inflation to demographic shifts and economic trends.

Benefit Design Monitoring

Integrate regular reviews of medical scheme benefit changes into the valuation process.

This includes assessing historical changes and anticipating future trends in benefit adequacy adjustments.

Enhanced Sensitivity Testing and Margins

Apply rigorous sensitivity analyses on key variables influencing contribution inflation, such as economic factors and medical cost escalation.

Incorporate explicit contingency margins to account for potential unmodeled variances.

Stakeholder Collaboration

Engage with medical scheme administrators to better understand the rationale behind recent contribution changes.

Collaborate on a feedback loop to refine assumptions based on emerging patterns and trends.

[Question 2(ii): Total 10]

Question 2(iii)

This question assesses the candidate's ability to evaluate the financial and actuarial impacts of various hypothetical scenarios on the PRMA liability valuation results. Candidates are expected to demonstrate their understanding of how each scenario influences key valuation assumptions. Answers should reflect a professional and comprehensive approach, showing the candidate's ability to adapt valuation methodologies to address complex, real-world changes effectively.

Question 2(iii)(a)

Candidates did identify that there would be an increase in the liability due to the likely increase in medical scheme expenses due to the shortfall of recovery from the RAF. Stronger candidates were able to indicate that the impact may depend on the level of accidents that qualified for RAF coverage within the Schemes experience and the linkage to the age profile of the scheme.

Increase in Claims Costs

Currently, medical schemes often recover healthcare costs related to motor vehicle accidents from the Road Accident Fund (RAF), alleviating the financial burden on the scheme.

Employers might take the view that the RAF will continue to fund these costs as is currently the case as the contrary would be a massive structural shift in subrogation for social funding.

If recovery is no longer permitted, for the purpose of this fictitious possible scenario, schemes would bear these costs entirely, leading to higher claims expenditure.

This would cascade to increased medical scheme contributions, directly inflating the subsidy costs borne by the employer under the PRMA liability.

Higher Contribution Inflation

The increased burden on medical schemes would likely result in higher annual contribution increases.

Since PRMA liabilities are linked to expected contribution levels, higher contribution inflation would significantly elevate the liability.

Contribution inflation assumptions would need revision, potentially leading to higher future obligations.

Impact on Discounted Mean Term (DMT)

Higher projected costs might alter the scheme's financial dynamics, potentially affecting the duration of the liabilities as viewed under IAS 19.

The weighted mean term might adjust, impacting the discount rate applied in the valuation.

Revised Assumptions

Actuarial assumptions for the PRMA liability would need to explicitly incorporate the additional costs.

This would include updated margins for adverse experience in healthcare utilization trends associated with motor vehicle accidents.

[Question 2(iii)(a): Total 4]

Question 2(iii)(b)

Candidates were able to indicate the potential impact based on the benefits that the Scheme would now cover. Generally, they identified that the liability would likely decrease since the reduced cover would result in a contribution decrease.

Reduced Role of Medical Schemes

The NHI framework envisions universal health coverage funded primarily by mandatory tax contributions, with medical schemes limited to offering complementary benefits. This structural change reduces the scope and relevance of medical scheme contributions, which are typically the basis for PRMA subsidies.

For the purpose of this possible fictitious scenario where medical schemes play only a complementary role (noting that the extent is not specified) when NHI is implemented: medical schemes will have to transition to offering limited coverage, and as a result contributions are expected to decrease or stabilise at lower levels. This will directly affect the expected future contribution inflation rates used in PRMA liability valuations. The valuation basis will need adjustments to reflect these new dynamics, potentially resulting in lower projected liabilities.

The anticipated lower projected liabilities assume that medical schemes will offer a subset of the current benefit design. The exact benefit design of medical schemes in an NHI era have not (yet) been defined.

The magnitude of the change will depend on the benefits covered under NHI (which have not yet been defined)…

…and the uptake of medical scheme cover (which is also uncertain in the absence of the benefit design definition and the anticipated sentiment towards these benefits).

Employers may need to redefine the scope of PRMA benefits, shifting subsidies from comprehensive medical scheme contributions to co-payments or non-covered services under NHI.

Impact on Contribution Inflation Assumptions

It is possible that the introduction of NHI could suppress medical scheme contribution inflation, which has historically been higher than general inflation due to medical cost escalation...

…but this will depend on the underlying structural changes, and how the risks will be pooled and priced for.

Actuarial valuations will need to incorporate revised inflation assumptions that reflect this moderated contribution environment.

Sensitivity testing on contribution inflation assumptions will become critical, given the uncertainty around the timing and scale of changes under NHI.

Changes to Actuarial Assumptions under IAS 19

Government bonds or corporate bonds may be repriced in response to fiscal pressures associated with NHI funding, affecting discount rates used in the valuation.

Improved access to healthcare under NHI may increase the country's life expectancy (conforming more to the mortality experience of the medical scheme population) and alter standard mortality tables and morbidity trends, impacting the liability projections for employer-sponsored retiree healthcare.

[Question 2(iii)(b): Total 4]

Question 2(iii)(c)

Good candidates were able to discuss the potential impact based on the relationship between tariff increases and contribution increases. Stronger candidates suggested that the utilisation assumption of schemes may be more significant and potentially outweigh the REPO rate impact.

Impact on the Discount Rate and PRMA Liability Valuation

The discount rate used in the valuation of the PRMA liability is typically linked to government bond yields, which move in tandem with the repo rate.

An increase in the repo rate is likely to result in higher bond yields, subsequently raising the discount rate.

A higher discount rate reduces the present value of the future medical aid subsidy payments, leading to a decrease in the reported PRMA liability under IAS 19.

Potential Inflationary Effects on Medical Scheme Contributions

While the increase in the repo rate aims to curb inflation, it may not immediately offset contribution inflation in the medical scheme environment, as these are influenced by medical price inflation and technological advances.

Any continued upward pressure on contribution inflation would necessitate revising the long-term inflation assumptions, potentially offsetting the benefit of a reduced liability due to a higher discount rate.

Economic Pressure and Member Behaviour

Higher repo rates typically translate into increased costs of borrowing for individuals, reducing disposable income. This may pressure employees to opt for less comprehensive medical scheme options, thereby altering the expected future subsidy levels payable by PBS. This will be offset if employees upgrade during retirement where they receive a 100% subsidy.

Conversely, economic pressure may lead to delayed retirement or increased dependence on employer-provided benefits, which could have secondary impacts on liability projections.

However, it can also be argued that the 100% subsidy is an incentive to retire as soon as possible (or a disincentive to retire late) to unlock this benefit, which would increase the disposable income for the employee.

[Question 2(iii)(c): Total 4]

Question 2(iii)(d)

The candidates indicated that the liability would increase due to the increase in the number of lives covered. Some contrasted that the actual number of children eligible when their parents retired may be minimal and so there would be a limited impact.

Increase in Liability Due to Additional Lives Covered

Including child dependants expands the number of individuals covered under the subsidy, directly increasing the liability. This will depend on the definition of a child dependant by the scheme.

Despite the increase in coverage, child dependants typically contribute a smaller proportion of the main member's contribution. Medical schemes often charge child dependants approximately one-quarter to one-third of the main member's contribution.

As per IAS 19, the liability accrued for child dependants will be limited to the portion of benefits attributable to the employee's past service relative to their total expected service period. This method ensures that only a fraction of the additional liability is recognized in the present period. But this fraction could be large for employees closer to retirement age with many years of past service.

Limited Longevity of Child Dependants as Beneficiaries

The majority of child dependants will age out of eligibility before the primary member reaches retirement age. For example, an employee retiring at 65 is unlikely (however, not impossible) to have child dependants under the age of 25 still qualifying for benefits. This mitigates the long-term financial impact.

Impact on Employer Costs

While the inclusion of child dependants increases the subsidy, the cost impact is moderated by the lower contributions associated with children and the finite period for which they remain eligible.

Revised actuarial assumptions will be required to reflect the additional demographic group. These assumptions should account for factors such as age distribution, mortality rates, and utilization trends specific to child dependants.

Broader Scheme and Member Implications

The inclusion of more beneficiaries may alter the scheme's membership structure and claims profile. This could result in increased cross-subsidization pressures within the scheme, potentially affecting contribution levels.

[Question 2(iii)(d): Total 4]

Question 2(iii)(e)

Candidates noted that the liability would likely increase but may be impacted by the number of these graduates remaining with the company to retirement age. Some noted the potential dissatisfaction with employees that did not qualify for the subsidy. Stronger candidates indicated that due to the lack of accrued service by this cohort by the time of the valuation that there would be no impact.

Increase in the Present Value of Liabilities

As at 31 December 2025, the liability valuation will not reflect any impact from the inclusion of graduates appointed after 31 December 2025, as they will not yet be active employees within the eligibility criteria. These graduates would only be accounted for in the valuation dated 31 December 2026, unless the Board explicitly requests an interim valuation before then.

Expanding subsidy eligibility to include additional employees increases the population entitled to benefits. The immediate implication is an increase in the present value of future obligations due to the projection of benefits for a larger eligible group.

The actuarial valuation will recognize higher liabilities, but under the Projected Unit Credit Method, only a minimal portion of the expected present value of future subsidies will be allocated to the early stages of these graduates' careers. This is because the majority of the benefit accrual occurs as employees approach retirement age.

Moreover, as these graduates do not receive the subsidy during their active employment, they are likely to opt for the most affordable medical scheme options, given its impact on their disposable income. This could result in lower average costs associated with this group in the short term.

Additionally, factors such as employee loyalty, tenure, and typical attrition rates at Protea Business Solutions Pty Ltd (PBS) would need to be considered, but in general it is unlikely that a significant proportion of newly appointed graduates would remain with the employer throughout their careers. This reduces the probability of these individuals reaching retirement and becoming eligible for the subsidy.

Consequently, the potential increase in the PRMA liability from this scenario is expected to be negligible or, in some cases, non-existent, depending on employee retention patterns and behavioural trends. However, a 100% post-retirement subsidy may entice employees to remain with the employer at higher rates than other employers.

Increase in the Service Cost Component

The current service cost, representing the cost of benefits accrued for employees in the current year, will increase to account for the extended eligibility.

Higher Sensitivity to Assumptions

The PRMA liability will become more sensitive to demographic and financial assumptions such as mortality, employee turnover, and medical cost inflation.

For instance, younger graduates typically have a longer time horizon until retirement, extending the period of liability and increasing the impact of discount rate changes.

Potential Changes to the Discounted Mean Term (DMT)

The inclusion of younger employees would likely increase the average duration of liabilities, which might lead to adjustments in the discount rate and other financial assumptions.

[Question 2(iii)(e): Total 4]

Question 2(iv)

This question evaluates the candidate's ability to analyse the broader implications of each scenario on employees and propose practical measures that employers can adopt to support their workforce. Candidates are expected to demonstrate empathy for employee well-being while balancing financial and operational considerations. Answers should reflect a professional understanding of the interconnectedness of actuarial, organizational, and human factors in managing the implications of such scenarios.

Question 2(iv)(a)

Employee Impact

Employees may face higher medical scheme contributions during active employment as the schemes absorb the unrecovered costs, reducing affordability.

Without a subsidy during active employment, the employees could resign from PBS if they can find alternative employment where medical scheme contributions are subsidised during active employment.

Retirees already in receipt of the subsidy should not be impacted as the subsidy is expressed as 100% of the monthly gross contribution – even if now higher.

However, if the medical scheme did alter the benefit design in reaction to this scenario, it could imply more out-of-pocket expenditure, which would directly reduce their disposable income.

Employer Support

The employer could increase the subsidy level for medical aid contributions during active employment to offset higher costs for employees, maintaining the affordability of healthcare benefits.

Conducting education campaigns to help employees understand their healthcare options, manage healthcare costs, and optimize their scheme benefits effectively and how to claim effectively from the RAF in their personal capacity.

Offering financial planning workshops or consultations can help employees manage increased healthcare expenses more effectively, including strategies for saving and investing for future medical needs.

Employers could introduce wellness initiatives aimed at reducing healthcare utilization, such as preventive health screenings, fitness programs, or access to mental health support.

[Question 2(iv)(a): Total 2]

Question 2(iv)(b)

Employee Impact

It is anticipated that employees, regardless of income or employment status, will have access to comprehensive healthcare services under NHI (depending the richness of the benefit package, which are still to be determined)…

…potentially improving healthcare affordability and equity – the likelihood of this depends on the enacted legislation.

Employees accustomed to private medical schemes may experience dissatisfaction with potential reductions in service quality, longer waiting times, or limited choice of providers under NHI.

To fund NHI, employees may face increased income or payroll taxes, offsetting any savings from reduced medical scheme contributions.

Employer Support

Employers can provide subsidies for services not covered by NHI (e.g., private hospital rooms or elective procedures). This helps employees manage potential gaps in care.

Employers could offset increased tax burdens by enhancing salaries or providing direct contributions toward employees' NHI levies, but this type of employer support is limited by its affordability constraints

Employers may need to assist retirees by adjusting PRMA benefits to cover costs not included in NHI or offering additional cash allowances.

Employers can invest in preventive healthcare programs, such as fitness and mental health support, to reduce employees' dependence on curative services.

[Question 2(iv)(b): Total 2]

Question 2(iv)(c)

Employee Impact

Higher repo rates lead to increased borrowing costs, reducing disposable income for employees who rely on credit facilities such as home loans or personal loans. This may affect their ability to afford medical scheme contributions, especially for retirees without active income streams.

Retirees who are dependent on fixed incomes, such as pensions, will face greater challenges managing living costs alongside rising medical scheme contributions, even if the employer subsidy remains at 100% of gross contributions.

Employees may shift to lower-cost medical benefit options to manage affordability, potentially reducing the level of coverage and increasing out-of-pocket medical expenses.

Active employees might delay elective treatments or neglect healthcare needs due to financial constraints, potentially exacerbating long-term health issues.

Employer Support

The employer could temporarily increase the subsidy for active employees' medical scheme contributions to mitigate affordability challenges. For example, providing a percentage-based subsidy during employment could support employees with the immediate impact of higher costs.

Employers could offer low-interest loans or salary advances to help employees manage increased borrowing costs, particularly for medical expenses.

Introduce workshops or consultations focused on financial planning, debt management, and budgeting to help employees navigate economic pressures.

Educate employees on selecting appropriate benefit options, using designated service providers, and managing healthcare costs efficiently.

[Question 2(iv)(c): Total 2]

Question 2(iv)(d)

Employee Impact

Employees without child dependants might perceive the expansion as inequitable if they indirectly subsidize the costs for those with dependants through higher contribution rates or scheme adjustments to the extent that this increases the number of child dependants on the scheme.

Employees may appreciate the expanded benefits as a demonstration of the employer's commitment to supporting families, enhancing overall employee satisfaction and retention.

However, employees might also realise that this is not an equitable benefit as it only benefits employees who have children later in life.

In addition, the benefit only becomes active for the short period of time during which the child remains younger than 25 during the retirement of the employee.

Employer Support

Employers could increase the subsidy percentage during active employment to offset higher contribution costs for employees with child dependants, ensuring affordability and providing equitable employee benefits to retirees.

Implement a tiered subsidy structure based on family size or number of dependants to provide targeted support.

Offer access to vaccinations, routine screenings, and wellness programs for child dependants to reduce long-term healthcare costs and utilization.

Allow employees to customize their benefit packages based on their unique needs, enabling those without dependants to opt for lower-cost plans.

[Question 2(iv)(d): Total 2]

Question 2(iv)(e)

Employee Impact

Extending subsidy eligibility to graduates appointed after 31 December 2025 demonstrates a commitment to supporting employees' long-term well-being. It aligns with a paternalistic workplace culture that values employees' financial security in retirement.

Future graduates may view this as a valuable addition to their total remuneration package, which could improve employee morale, attract talent, and enhance the employer's reputation as an attractive workplace.

As the subsidy applies only after retirement, there is no direct financial benefit for these employees during their active working years. Graduates may still face financial constraints related to medical scheme contributions, as these are funded from their disposable income until retirement.

If the probability of employees staying with the company until retirement is low, this benefit may have limited practical value to many graduates, particularly if they perceive the likelihood of realizing the subsidy as minimal.

Employer Support

To enhance the perceived value of the benefit and encourage long-term tenure, the employer could implement additional retention mechanisms, such as incremental increases in benefits for longer service or loyalty bonuses.

Supporting employees through wellness initiatives, such as preventative healthcare services, chronic disease management programs, or mental health support, can reduce immediate healthcare costs for employees while reinforcing a culture of care.

Introducing interim milestones, such as partial subsidisation of medical costs for employees who achieve certain years of service, could provide tangible benefits earlier in employees' careers and enhance retention.

[Question 2(iv)(e): Total 2]

[Question 2: Total 50]