1

The implied inflation rate derived from the difference between nominal and real government bond yields (known as the breakeven inflation rate) is often seen as a market-based expectation of future inflation. For an insurance company assessing inflation risk exposure in its assets and liabilities, using this measure can be appropriate in some contexts, but there are also important limitations.

**Strengths of using the implied inflation measure:**

* **Market-based and forward-looking:** The breakeven inflation rate reflects the collective expectations of market participants about future inflation, which can be more up-to-date than lagging economic indicators.
* **Availability across maturities:** Nominal and index-linked government bonds are issued across a range of maturities, allowing the insurer to derive implied inflation expectations over different time horizons, which is useful for liability cash flow matching.
* **Consistent with market pricing:** If the insurer is valuing liabilities using market-consistent approaches (e.g. Solvency II frameworks), using implied inflation aligns with observable market prices, helping ensure consistency in valuation.

**Limitations and considerations:**

* **Risk premia distortions:** The breakeven inflation rate includes not only expected inflation but also an inflation risk premium and liquidity premium. These distortions can cause the implied inflation rate to diverge from actual expectations, leading to valuation inaccuracies if not adjusted.
* **Liquidity differences:** Index-linked bonds often have lower liquidity than nominal bonds, especially at longer maturities. This can exaggerate the breakeven rate and misrepresent genuine inflation expectations.
* **Not tailored to specific exposure types:** Insurers face different types of inflation risk—some related to general price inflation (e.g. wage-linked expenses) and others to specific sectors (e.g. medical cost inflation). The breakeven rate may not accurately reflect sector-specific inflation trends.
* **Mismatch with contractual terms:** Some liabilities, such as annuities with inflation protection, may be indexed to specific inflation indices (e.g. RPI, CPIH) that do not align perfectly with the index used in the government bonds. Valuing these liabilities using a generalized implied inflation rate can introduce basis risk.

**Conclusion:**  
The implied inflation rate is a useful starting point for gauging market expectations of inflation and is consistent with a market-consistent valuation framework. However, its use should be supplemented with adjustments for risk premia, liquidity differences, and the specific nature of the insurer’s inflation exposures. Insurers may also incorporate alternative inflation forecasts and perform sensitivity analysis to better capture the range of possible inflation outcomes.

2

**Potential buyers of a company:**

* **Improved transparency:** Buyers can make more informed investment decisions when they have a clearer understanding of a company’s financial obligations, including the present value of employee benefit schemes.
* **Better valuation accuracy:** The disclosure allows for a more accurate assessment of the company’s liabilities and net worth, reducing the risk of overpaying due to hidden pension deficits or post-employment obligations.
* **Risk identification:** Buyers can evaluate the financial health and sustainability of the benefit schemes, including funding levels and potential cash flow strains in the future.
* **Comparable information:** Standardised disclosures across companies help investors compare different acquisition targets on a like-for-like basis.

**Members of the benefit scheme:**

* **Greater security and awareness:** Scheme members gain insight into the value of the benefits promised and the extent to which the company is financially committed to those benefits.
* **Increased accountability:** Public reporting pressures companies to manage benefit schemes more responsibly and avoid neglecting long-term obligations.
* **Improved trust:** Transparency may build trust in the employer and the benefit scheme, especially in environments where corporate governance is still developing.
* **Early warning signals:** Members can spot warning signs if the disclosed values suggest underfunding or growing liabilities, allowing them to seek further information or take protective steps.

**The government:**

* **Enhanced regulatory oversight:** Disclosures enable regulators to monitor systemic risks from corporate benefit schemes, particularly those that could affect financial stability or retirement security.
* **Better policy development:** More complete data helps inform social and economic policies, especially in areas such as labor rights, pensions, and income security.
* **Tax policy implications:** The government can assess the true cost of benefit schemes and ensure tax rules are applied fairly and efficiently.
* **Public confidence:** Mandating such disclosures improves corporate governance standards and investor protection, enhancing confidence in the country's capital markets.

3

**(i) Advantages to the company of medically underwriting potential policyholders:**

* **Improved risk selection:** Medical underwriting allows the company to identify applicants with higher health risks and either decline coverage, apply exclusions, or charge higher premiums, reducing the risk of adverse selection.
* **More accurate pricing:** By assessing each applicant’s health status, the insurer can better align premiums with expected claims costs, ensuring pricing adequacy and protecting profitability.
* **Reduced claims costs:** Identifying and managing high-risk individuals at the outset helps limit future claim payouts, especially for long-duration benefits such as those under long-term sickness policies.
* **Enhanced sustainability:** Better control over who is accepted into the risk pool supports the long-term viability of the product and the insurer's broader portfolio.
* **Lower reserves and capital strain:** More accurate risk assessment can result in lower expected claims and less need for reserve strengthening, helping to optimise capital requirements.
* **Discouragement of fraudulent claims:** The presence of a thorough medical assessment may deter applicants from hiding pre-existing conditions or submitting false information.
* **Improved portfolio quality:** Medical underwriting helps create a more homogenous and predictable risk pool, which benefits actuarial modelling, pricing stability, and financial planning.

**(ii) Possible ways that the insurance company can manage morbidity risk after policy inception:**

* **Claims management procedures:** Implementing strict and consistent claims assessment processes helps verify the validity of claims and ensures that benefits are only paid when policy terms are met.
* **Rehabilitation support:** Offering rehabilitation services or return-to-work programs can help claimants recover and return to employment sooner, reducing the duration and cost of claims.
* **Ongoing medical assessments:** Requiring periodic medical reviews for long-term claimants ensures continued eligibility and helps detect recovery or improvement in health.
* **Benefit limits and waiting periods:** Setting maximum benefit durations, deferred periods before benefits start, and caps on payouts helps contain claim costs and reduce exposure.
* **Policy exclusions and limitations:** Defining specific exclusions (e.g. for pre-existing conditions or certain illnesses) and benefit limits at the outset can reduce long-term risk.
* **Experience analysis and pricing reviews:** Regular monitoring of actual morbidity experience compared to assumptions allows for early detection of emerging trends and adjustments to premiums for new business or reviews of reserving.
* **Reinsurance arrangements:** Transferring part of the morbidity risk to reinsurers helps limit the insurer’s exposure to high-cost or unexpectedly high volumes of claims.
* **Fraud detection initiatives:** Using data analytics, claim patterns analysis, and investigative processes helps to detect and prevent fraudulent or exaggerated claims.
* **Policyholder communication:** Educating policyholders on the claims process, benefit conditions, and healthy lifestyle choices may lead to better outcomes and lower claims incidence.

4

**(i) Reasons why moving to algorithmic decision making for underwriting and pricing may have increased the number of customer complaints:**

* **Lack of transparency:** Customers may not understand how decisions are made by the algorithm, especially if pricing or underwriting outcomes seem unfair or unexpected, leading to confusion and dissatisfaction.
* **Perceived unfairness:** Algorithms may produce results that feel impersonal or unjust to customers—for example, charging high premiums based on proxy variables (e.g. postcode or occupation) that the customer cannot control.
* **Errors or data quality issues:** Automated systems may rely on inaccurate or outdated data, leading to incorrect decisions or pricing that would likely have been caught by a human underwriter.
* **Limited personalisation:** Unlike human underwriters, algorithms may not consider exceptional circumstances or individual context, which can lead to complaints from customers with valid but unusual cases.
* **Poor communication:** Automated systems may not provide clear or sufficient explanations for decisions, leaving customers feeling dismissed or ignored.
* **Discrimination risk:** If the algorithm is not carefully designed and monitored, it could unintentionally discriminate against certain groups, leading to both complaints and potential regulatory scrutiny.
* **No opportunity to appeal:** Customers may feel frustrated if there is no easy way to challenge or appeal a decision made entirely by a computer system.
* **Change in experience:** Long-standing customers used to personal service may feel alienated or devalued by a sudden switch to impersonal, automated interactions.
* **Technical glitches:** As with any new system, early-stage implementation may introduce bugs or inconsistencies in decision-making, resulting in incorrect outcomes and increased complaints.

**(ii) Two other ways the company could use algorithmic decision making:**

* **Claims triage and fraud detection:** Algorithms can be used to automatically assess incoming claims, flagging straightforward cases for fast-track settlement and identifying potentially suspicious claims for further investigation based on patterns, inconsistencies, or historical fraud indicators.
* **Customer service automation:** The company could implement algorithm-driven chatbots or virtual assistants to handle routine customer queries, such as policy details, documentation requests, or payment processing, improving efficiency and availability of support.

5

**(i) How the insurance company may determine the theoretical cost of the pet insurance product:**

* **Data collection:** Gather relevant data on pet insurance claims, ideally including frequency and severity of claims by pet type, breed, age, and medical history. This may involve internal historical data (if available), industry data, or data from external providers or reinsurers.
* **Risk segmentation:** Categorise pets into homogeneous risk groups based on key factors such as species (e.g. dog, cat), breed, age, gender, geographic location, and lifestyle. These factors influence the likelihood and cost of claims.
* **Claims frequency estimation:** Estimate the expected number of claims per policy per year for each risk group using historical data or actuarial models.
* **Claims severity estimation:** Estimate the average cost per claim, including variation by treatment type, veterinary inflation trends, and potential for expensive one-off procedures.
* **Expected claims cost:** Calculate the expected claims cost per policy by multiplying claims frequency by claims severity for each risk group, then aggregating based on the expected mix of business.
* **Allowances for expenses:** Add estimates for operating costs, including acquisition, administration, claims handling, and overhead expenses.
* **Allowances for profit and risk margin:** Include a margin for profit and for uncertainty in assumptions (e.g. due to data limitations or new market conditions), often based on risk appetite and capital requirements.
* **Policy terms and limits:** Factor in policy features such as deductibles, co-payments, annual or per-incident limits, exclusions, and waiting periods, which influence claim costs.
* **Inflation and trends:** Account for projected veterinary cost inflation and trends in pet care practices, which may affect future claim costs.
* **Reinsurance costs:** If the company uses reinsurance to limit exposure to large claims or high claim frequency, include the cost of reinsurance in the theoretical pricing.

All these components are combined to calculate the theoretical premium required per policy to cover expected costs, provide a return on capital, and ensure product sustainability.

**(ii) Reasons why individuals may purchase pet insurance:**

* **Financial protection:** To avoid unexpected high veterinary bills, especially for emergency treatments, surgeries, or chronic conditions.
* **Peace of mind:** Knowing they can afford necessary care for their pet without financial stress improves emotional reassurance for pet owners.
* **Access to better treatment:** Insurance may enable owners to choose higher-quality or more advanced veterinary care that they might otherwise find unaffordable.
* **Budgeting convenience:** Spreading potential high costs over regular premium payments helps with financial planning and reduces the impact of sudden expenses.
* **Emotional attachment:** Many pet owners view pets as family members and want to ensure their well-being, just as they would for a child or dependent.
* **Increasing veterinary costs:** Rising prices for treatments, diagnostics, and medication make pet insurance more attractive as a way to manage future cost inflation.
* **Breed-specific risk:** Owners of pets with known hereditary or breed-related health issues may seek insurance to mitigate expected medical costs.
* **Promotion or recommendation:** Vets, breeders, or insurers may actively promote pet insurance, influencing purchase decisions.
* **Legal or travel requirements:** Some policies offer coverage for third-party liability or for medical costs while travelling, which may be required or desired in specific situations.

6

**(i) How pension funds may quantify the risks they are exposed to:**

* **Asset-liability modelling (ALM):** Use stochastic or deterministic models to project future asset returns and liability cash flows under various economic scenarios, assessing the impact on funding levels and solvency over time.
* **Value at Risk (VaR) and Conditional Tail Expectation (CTE):** Quantify potential losses at a specified confidence level over a set time horizon, helping to assess downside risk exposure, particularly for investment risk.
* **Stress and scenario testing:** Assess the fund’s resilience by applying extreme but plausible shocks (e.g. market crashes, interest rate falls, inflation spikes) to evaluate their impact on assets, liabilities, and funding ratio.
* **Duration and convexity analysis:** Compare the interest rate sensitivity of assets and liabilities to assess interest rate mismatch risk and the potential volatility in the funding position.
* **Sensitivity analysis:** Examine how changes in key assumptions (e.g. discount rates, inflation, mortality rates, salary growth) affect the present value of liabilities and funding requirements.
* **Liquidity risk assessment:** Project future cash flow needs and compare them against expected asset liquidity to ensure the fund can meet benefit payments and other obligations as they fall due.
* **Credit and counterparty risk measurement:** Evaluate exposure to default or downgrade risk from bond holdings, counterparties in derivative contracts, and other debt instruments.
* **Operational risk mapping:** Identify and assess the likelihood and impact of failures in processes, systems, or governance (e.g. administrative errors, fraud, cyber incidents).
* **Demographic risk quantification:** Analyse membership data and apply actuarial models to estimate the impact of changes in life expectancy, retirement ages, and member behaviour on liabilities.

By combining these methods, pension funds can build a comprehensive view of their risk profile and make informed decisions about funding, investment, and risk mitigation strategies.

**(ii) Four approaches that could be used to model risks of pension funds:**

1. **Deterministic modelling:** Uses fixed assumptions to project future outcomes under specific scenarios (e.g. fixed interest rate paths or market conditions) to assess the impact of changes on assets and liabilities.
2. **Stochastic modelling:** Simulates a wide range of possible future outcomes by assigning probability distributions to key variables (e.g. investment returns, inflation, longevity), allowing for assessment of risk under uncertainty.
3. **Scenario analysis:** Evaluates the effects of defined extreme or plausible events (e.g. financial crisis, sharp inflation rise) on the fund’s financial position to test resilience under stress.
4. **Sensitivity analysis:** Measures how sensitive the fund’s results are to changes in individual assumptions (e.g. +1% change in discount rate or mortality improvements), helping to identify key risk drivers.

**(iii) How the correlations between the risks of a pension fund can be monitored:**

* **Statistical analysis of historical data:** Use correlation matrices and regression analysis on historical market, demographic, and economic data to estimate how different risk factors (e.g. interest rates, inflation, asset returns) have moved together in the past.
* **Scenario and stress testing:** Apply multi-factor stress tests where multiple variables change simultaneously to observe the combined impact on funding and solvency, helping to reveal interactions between risks under extreme conditions.
* **Stochastic modelling with joint distributions:** Model risk factors using multivariate probability distributions (e.g. copulas) that explicitly capture dependencies and tail correlations between risks like longevity, inflation, and market movements.
* **Dynamic asset-liability modelling (ALM):** Use integrated models that simulate the joint evolution of economic and demographic factors to assess how correlated risks affect both sides of the balance sheet over time.
* **Regular risk dashboard reporting:** Create dashboards or risk reports that track correlations and co-movements between key variables (e.g. asset volatility vs. liability sensitivity) on an ongoing basis, allowing for real-time monitoring.
* **Monitoring market indicators:** Observe macroeconomic indicators, such as interest rate-inflation relationships or equity-bond correlations, that can signal shifts in interdependencies among risk drivers.
* **Expert judgment and governance reviews:** Engage actuaries, investment professionals, and risk committees to periodically review assumptions and qualitative factors influencing correlations, particularly in changing economic conditions.

By monitoring these correlations, pension funds can better understand compounding effects, avoid underestimating total risk exposure, and improve their strategic risk management.

**(iv) How key risks of a pension fund can be mitigated:**

* **Investment risk:**
  + **Diversification:** Invest across asset classes, sectors, and geographies to reduce exposure to any single market or asset type.
  + **Liability-driven investment (LDI):** Align the investment strategy with liability characteristics using interest rate and inflation hedging instruments (e.g. bonds, swaps).
  + **Use of derivatives:** Employ interest rate or inflation swaps, futures, and options to hedge specific market exposures.
* **Longevity risk:**
  + **Longevity swaps or reinsurance:** Transfer some or all of the longevity risk to reinsurers or counterparties in exchange for fixed payments.
  + **Buy-ins and buy-outs:** Purchase insurance contracts or transfer liabilities to insurers to fully or partially remove longevity and investment risks.
* **Inflation risk:**
  + **Index-linked assets:** Invest in inflation-linked bonds or other inflation-protected securities to match liabilities that grow with inflation.
  + **Inflation swaps:** Use derivatives to hedge inflation exposure more flexibly when matching assets are unavailable or insufficient.
* **Interest rate risk:**
  + **Duration matching:** Structure the asset portfolio to have a similar duration to the liabilities, reducing sensitivity to rate changes.
  + **Interest rate derivatives:** Use swaps, forwards, or options to hedge movements in interest rates that affect liability valuations.
* **Liquidity risk:**
  + **Cash flow matching:** Align asset income and maturity profiles with expected liability outflows to ensure timely benefit payments.
  + **Holding liquid assets:** Maintain a portion of the portfolio in cash or easily tradable assets to cover unexpected short-term needs.
* **Operational risk:**
  + **Robust governance:** Maintain clear policies, controls, and oversight structures to ensure sound administration and decision-making.
  + **Third-party audits and reviews:** Regularly assess systems and processes for weaknesses or errors.
  + **Cybersecurity measures:** Protect data and systems from digital threats through secure IT infrastructure and staff training.

By combining these mitigation techniques, pension funds can reduce the likelihood and impact of key risks, thereby improving the fund’s resilience and financial stability.

7

**(i) Why the insurer’s own data may not be appropriate for setting the mortality assumptions for the tailored premium rates:**

* **Different demographic profile:** The insurer’s existing data may reflect the general population or a more diverse customer base, while the bank’s customers are specifically high-wealth individuals, who typically have different mortality characteristics.
* **Socioeconomic differences:** High-wealth individuals often have better access to healthcare, healthier lifestyles, and lower exposure to certain risks, leading to lower mortality rates compared to the general population. The insurer’s data may not capture these favourable mortality trends.
* **Selection bias:** The insurer’s historical data may include lives with a broader range of occupations, education levels, or health behaviours that are not representative of the high-wealth segment.
* **Underwriting basis mismatch:** The insurer's past data might be based on different underwriting criteria or distribution channels, making it unsuitable for pricing policies targeted at bank clients with potentially more stringent selection and higher disclosure standards.
* **Volume and credibility limitations:** The insurer may have limited data on high-wealth individuals in its existing portfolio, resulting in low statistical credibility for this subgroup and making it risky to rely on that data for setting assumptions.
* **Product variation:** If the tailored product differs materially in design or distribution (e.g. exclusive banking partnerships or digital underwriting), the resulting risk profile may also differ, reducing the relevance of past experience.

Therefore, the insurer may need to supplement or replace its internal data with external sources, industry studies, or predictive modelling specific to the high-wealth population to accurately reflect their expected mortality.

**(ii) External data sources the insurer could use when setting the mortality assumptions for the tailored premium rates, with reasons:**

1. **National population mortality tables (segmented by income or socioeconomic status):**
   * Reason: These tables often include mortality rates by income level, education, or occupation, which can provide a broad baseline for estimating the improved mortality of high-wealth individuals relative to the general population.
2. **Industry experience studies (e.g. from actuarial or insurance associations):**
   * Reason: Studies published by professional bodies such as the Continuous Mortality Investigation (CMI) in the UK or the Society of Actuaries (SOA) in the US provide aggregate insured lives data, including segmentation by product type, distribution channel, and policyholder characteristics.
3. **Medical and demographic research studies:**
   * Reason: Academic or governmental studies often analyse the relationship between wealth, health, and mortality, offering valuable insights into how high-wealth status affects life expectancy.
4. **Reinsurer experience data:**
   * Reason: Reinsurers typically have access to large, diverse books of business and may provide mortality assumptions or benchmarks specific to high-net-worth clients or tailored insurance products.
5. **Mortality data from similar bancassurance arrangements:**
   * Reason: If available, data from other insurers with bank partnerships targeting high-wealth clients can provide more relevant benchmarks due to similar distribution methods and customer bases.
6. **International high-net-worth mortality tables (adjusted for local context):**
   * Reason: Where local data is lacking, insurers can use international tables for high-wealth populations, adjusting for country-specific factors like healthcare systems and mortality trends.

Using a combination of these sources can help the insurer derive more appropriate and defensible mortality assumptions for pricing tailored term assurance for the bank’s affluent clients.

8

**(i) How the expenses of the in-house department could be analysed:**

* **Categorise by function:** Break down expenses into core service areas — actuarial, investment, and administration — to understand cost drivers in each function separately.
* **Identify direct vs. indirect costs:**
  + Direct costs include staff salaries, software licences, and specific service-related expenses.
  + Indirect costs include shared resources such as office space, utilities, IT support, and management overheads.
* **Allocate shared costs:** Use reasonable allocation bases (e.g. time usage, headcount, or floor space) to apportion shared or overhead costs across the three service functions.
* **Analyse staff-related costs:** Examine salaries, pensions, training, and benefits for the department staff. Assess how time is spent across different services through time-tracking or interviews.
* **Review technology and systems costs:** Evaluate costs of software tools, IT infrastructure, security, and data management used in each function.
* **Examine outsourcing readiness costs:** Include any transition or project management costs that would arise if outsourcing were to take place (e.g. handover planning, data migration).
* **Benchmark costs:** Compare in-house expenses with industry benchmarks or external provider quotes for similar services to assess cost competitiveness.
* **Assess cost trends over time:** Review historical expense data to identify trends, cost escalation, or improvements in efficiency.
* **Consider service quality and value:** In addition to financial cost, analyse the quality, responsiveness, and flexibility of in-house services versus potential external providers, as these affect overall value.

This structured analysis helps provide a transparent view of current in-house costs and supports a fair comparison with the potential costs and benefits of outsourcing.

**(ii) Possible advantages to the scheme and sponsoring employer of outsourcing these services to third parties:**

* **Cost efficiency:**
  + Outsourcing may reduce fixed costs by converting them into variable costs, especially for smaller schemes where in-house teams may be underutilised.
  + External providers may benefit from economies of scale, allowing them to offer services at lower cost.
* **Access to specialist expertise:**
  + External firms often have a wide range of specialists with deep expertise in actuarial work, investment management, and pension administration, which may enhance the quality and depth of advice.
* **Improved technology and systems:**
  + Third-party providers may offer more advanced tools, platforms, and automation, improving efficiency, accuracy, and member experience.
* **Regulatory compliance and risk management:**
  + External providers are typically well-versed in evolving regulations and best practices, reducing compliance risk and administrative errors.
* **Focus on core business:**
  + Outsourcing allows the sponsoring employer to focus more on its primary business operations rather than managing in-house pension service functions.
* **Scalability and flexibility:**
  + Services can be scaled up or down depending on the scheme’s needs (e.g. during a buy-out or de-risking exercise), offering greater operational flexibility.
* **Independent advice:**
  + External actuaries and investment advisers may provide more objective advice compared to in-house teams closely tied to the employer.
* **Benchmarking and innovation:**
  + External firms work with multiple clients and can apply insights, benchmarking data, and innovative practices that may not be readily available to in-house teams.

Overall, outsourcing can offer a combination of cost savings, improved service quality, and reduced operational burden, especially if managed through strong governance and clear service-level agreements.

9

**(i)(a) Risks involved for the organisation:**

* **Financial risk:**
  + The organisation would be committing to cover potentially significant costs if a resident runs out of funds. Without additional funding sources, this could directly impact profitability or even financial viability.
* **Longevity risk:**
  + If residents live longer than expected, especially once they are no longer paying fees, the organisation could face higher care costs over time without matching income.
* **Selection risk:**
  + The guarantee might attract individuals who expect to outlive their financial resources, leading to adverse selection and a higher proportion of residents who ultimately become non-paying.
* **Cost inflation risk:**
  + Increases in the costs of care, wages, food, or utilities may not be matched by income if a growing number of residents stop paying fees but continue to stay under the guarantee.
* **Capital and funding strain:**
  + The organisation may need to maintain reserves or secure external funding to support the cost of providing care to non-paying residents, increasing capital strain.
* **Reputational risk:**
  + If the organisation fails to honour the guarantee due to financial pressure, it could face reputational damage and possible legal consequences.
* **Administrative complexity:**
  + Additional processes would be needed to assess residents' financial positions, determine eligibility for the guarantee, and manage transitions to non-paying status.

**(i)(b) Risks involved for the residents:**

* **Moral hazard (reduced financial planning):**
  + Some residents might manage their finances less prudently, relying on the guarantee rather than conserving assets to fund their care long-term.
* **Uncertainty over eligibility and terms:**
  + If the guarantee criteria or conditions are not clearly communicated, residents may be unsure whether they qualify or under what circumstances the guarantee applies.
* **Risk of service deterioration:**
  + If the organisation faces financial strain due to a high number of non-paying residents, it may cut service quality, staffing, or facility maintenance, impacting all residents.
* **Reliance on the organisation’s solvency:**
  + The security provided by the guarantee depends on the organisation remaining financially viable. If it struggles or fails, residents may lose both the guarantee and their place in the home.
* **Limited legal protection:**
  + Unless the guarantee is legally enforceable, residents may not have strong recourse if the organisation later modifies or withdraws it.

While the proposal offers important security to residents, it introduces significant financial and operational risks for the organisation, and its success would depend on robust planning, financial forecasting, and possibly external funding or insurance arrangements.

**(ii) Ways the organisation could manage the risks identified in part (i):**

* **Introduce eligibility criteria and means testing:**
  + Limit the guarantee to residents who have demonstrated they have no other means of support after careful assessment, reducing exposure to adverse selection and moral hazard.
* **Cap the number or duration of guaranteed places:**
  + Set a limit on how many residents can receive the guarantee at a time, or apply time limits (e.g. only covering a defined number of years), to contain long-term financial liability.
* **Establish a dedicated reserve fund:**
  + Build and maintain a financial reserve specifically to cover the cost of residents under the guarantee, helping to ringfence the risk from general operating budgets.
* **Secure external funding or partnerships:**
  + Seek government grants, charitable funding, or partnerships with local authorities or social care funds to subsidise costs for residents who can no longer pay.
* **Offer insurance-backed solutions:**
  + Explore the possibility of purchasing or offering long-term care insurance products that would help cover resident costs if their funds run out.
* **Conduct regular financial reviews of residents:**
  + Implement a system for periodic reassessment of residents’ financial status to plan ahead and monitor the potential cost of the guarantee.
* **Phase in the guarantee gradually:**
  + Pilot the guarantee in a limited number of care homes or for new residents only, allowing the organisation to assess financial impact before full rollout.
* **Adjust fees or pricing structures:**
  + Slightly increase fees for all residents to help cross-subsidise the potential cost of the guarantee, ensuring long-term funding sustainability.
* **Legal and contractual clarity:**
  + Clearly define the terms of the guarantee in resident agreements, including eligibility, conditions for continuing support, and the organisation’s rights, to reduce legal and reputational risks.
* **Regular monitoring and risk modelling:**
  + Use actuarial or financial modelling to project future costs under different scenarios and regularly update assumptions based on experience and economic trends.

By implementing a combination of financial safeguards, eligibility controls, and transparent governance, the organisation can better manage the long-term risks of offering such a guarantee while still supporting residents in need.

10

**(i) Possible reasons for the company’s decision to retain all of the insurance risks of the new product:**

* **Low risk exposure:**
  + The new product may carry relatively low insurance risk (e.g. low claims frequency or low potential claim amounts), making reinsurance unnecessary or uneconomical.
* **High confidence in pricing and underwriting:**
  + The company may have strong data, experience, or modelling capabilities to accurately price and underwrite the product, reducing the need to transfer risk.
* **Desire to retain profit margins:**
  + By not reinsuring, the company keeps all of the premium income and potential underwriting profits rather than sharing them with a reinsurer.
* **Strategic risk appetite:**
  + The insurer may be deliberately choosing to retain more risk as part of a broader diversification strategy across life and general business lines, aiming for better overall portfolio balance.
* **Reinsurance may not be cost-effective:**
  + Reinsurance premiums might be too high relative to the protection offered, especially for a new or niche product with limited market data or reinsurance appetite.
* **Regulatory capital position:**
  + The company may have a strong capital base and be able to absorb the additional risk without breaching solvency requirements, reducing the need for capital relief through reinsurance.
* **Desire to gain experience:**
  + Retaining the risk allows the company to gather its own claims and experience data on the new product, which can inform future pricing, reserving, and risk management.
* **Product simplicity:**
  + If the new product has straightforward terms and limited variability in outcomes, the risk may be considered manageable internally.
* **Short-term coverage or low accumulation risk:**
  + For products with short contract terms or limited exposure to large losses (e.g. capped benefits), the need for reinsurance is reduced.

This decision likely reflects a balance between the product’s risk profile, the company’s financial strength, and its strategic objectives in growing and diversifying its business.

**(ii) Sources of operational risks to the company posed by the new product:**

* **Product design flaws:**
  + Errors or ambiguities in the product terms and conditions could lead to misinterpretation, disputes, or unexpected claims, increasing financial and reputational risk.
* **System and process issues:**
  + Existing IT systems may not be fully equipped to handle the new product, leading to data entry errors, processing delays, or integration problems.
* **Staff training and knowledge gaps:**
  + Employees may be unfamiliar with the new product, leading to incorrect advice, administration errors, or poor customer service.
* **Underwriting and claims handling errors:**
  + Inadequate procedures or oversight in underwriting or claims processes can result in incorrect decisions or inconsistent treatment of policyholders.
* **Sales and distribution risks:**
  + Mis-selling or failure to clearly explain product features could lead to customer complaints, regulatory action, or reputational damage.
* **Compliance and regulatory risk:**
  + The new product may introduce new legal or regulatory obligations, and any failure to comply could result in penalties or enforcement actions.
* **Third-party service provider issues:**
  + If any part of the product administration (e.g. claims processing or distribution) is outsourced, operational failures by third parties can impact service and increase risk.
* **Fraud risk:**
  + New products may be more susceptible to fraud, especially if underwriting controls or claims checks are still being refined.
* **Data security and privacy:**
  + Collecting and handling customer information for the new product increases the risk of data breaches or non-compliance with data protection regulations.
* **Volume and scalability issues:**
  + Unexpectedly high demand for the new product could strain resources, leading to delays, errors, or a drop in service quality.

Managing these risks requires robust planning, testing, training, and monitoring frameworks to ensure the new product is integrated smoothly into the company’s operations.

11

**(i) Main factors influencing investment strategy for an established life insurance company with low free capital that only sells immediate annuities:**

* **Liability profile and cash flow matching:**
  + Immediate annuities involve predictable, long-term cash outflows. The investment strategy should aim to closely match asset cash flows to these liabilities to minimise reinvestment and interest rate risk.
* **Low risk tolerance due to limited free capital:**
  + With low free capital, the company has a reduced ability to absorb losses. This limits its capacity to invest in volatile or higher-risk assets, favouring low-risk, stable investments like government or high-quality corporate bonds.
* **Duration matching:**
  + The investment portfolio should match the duration of the annuity liabilities to reduce sensitivity to interest rate changes and avoid large solvency swings.
* **Regulatory and solvency requirements:**
  + The strategy must ensure compliance with regulatory capital and solvency rules, which may limit asset classes or require capital buffers for riskier investments.
* **Inflation protection (if annuities are index-linked):**
  + If the annuities have inflation-linked benefits, the strategy should include assets that hedge against inflation, such as index-linked bonds. |
* **Liquidity needs:**
  + While annuities require regular payments, the liability cash flows are usually predictable. The investment strategy should ensure sufficient liquidity to meet payments without needing to sell long-term assets at a loss.
* **Credit risk management:**
  + Given the reliance on fixed-income instruments, managing credit risk through diversification and high-quality assets is essential to protect capital.
* **Return vs. risk trade-off:**
  + The strategy should aim to earn a sufficient return to meet liabilities and support profitability, but without exposing the company to excessive volatility or risk given its low capital position.
* **Reinvestment risk:**
  + In a low interest rate environment, the company must manage the risk that future reinvestments may not earn enough to meet liability cash flows, especially for long-dated annuities.
* **Asset-liability valuation basis:**
  + The basis used to value liabilities (e.g. risk-free vs. matched yield) influences asset strategy, especially if the company reports under market-consistent frameworks like Solvency II.

These factors point to a conservative, liability-driven investment strategy focused on stability, cash flow matching, and capital preservation.

**(ii) Two main types of assets the company is likely to hold:**

1. **Government bonds:**
   * These provide stable, predictable cash flows with low credit risk, making them well-suited for matching annuity liabilities and meeting regulatory capital requirements.
2. **High-quality corporate bonds:**
   * These offer higher yields than government bonds while still maintaining relatively low risk, helping the company enhance returns to meet long-term obligations, especially important given its low free capital position.

**(iii) Impacts of the change in regulations on the company:**

* **Increased volatility in financial statements:**
  + Valuing assets and liabilities using market-based discount rates means both sides of the balance sheet will fluctuate with market conditions (e.g. interest rates, credit spreads), leading to potentially significant year-on-year changes in reported surplus and solvency position.
* **Closer alignment of valuation with economic reality:**
  + The new approach provides a more realistic, up-to-date reflection of the company’s financial position, improving transparency for stakeholders, including regulators and policyholders.
* **Greater sensitivity to interest rate changes:**
  + A fall in market interest rates will increase the present value of annuity liabilities more than before, potentially worsening the company's funding position unless assets are well-matched in duration and yield. Conversely, a rise in rates could improve reported solvency.
* **Pressure on asset-liability matching (ALM):**
  + The company will need to review and potentially strengthen its ALM practices to ensure that changes in the value of assets and liabilities remain aligned, limiting funding volatility.
* **Impact on capital requirements and risk management:**
  + More volatile liability values may lead to higher capital buffers being required to absorb fluctuations, especially important given the company’s low free capital.
* **Change in investment strategy considerations:**
  + The company may shift further towards market-consistent, long-duration fixed-income assets (e.g. government or corporate bonds with matching cash flows) to stabilise the balance sheet under the new valuation regime.
* **Operational and reporting impacts:**
  + New processes, systems, and actuarial models may be needed to perform regular market-based valuations, increasing operational complexity and administrative costs.
* **Communication and stakeholder management:**
  + The company may need to enhance disclosure and communication with stakeholders to explain fluctuations in financial results driven by market movements rather than underlying performance.

This regulatory change makes it essential for the company to adopt robust risk management and valuation practices to cope with increased financial sensitivity and ensure long-term sustainability.

**(iv) Possible reasons why the regulations have been changed:**

* **Improved transparency and comparability:**
  + Market-based valuations provide a more accurate and current view of an insurer’s financial position, allowing stakeholders (including regulators, investors, and policyholders) to better compare companies across the industry.
* **Alignment with international standards:**
  + The change likely reflects a move towards globally accepted accounting and regulatory frameworks (e.g. IFRS 17 or Solvency II), which require market-consistent valuations to promote consistency and comparability across jurisdictions.
* **More realistic risk assessment:**
  + Using outdated discount rates based on initial asset yields may understate or overstate the true value of liabilities. Market-based rates ensure that valuations reflect current economic conditions, enabling more accurate risk assessments.
* **Incentivises better risk and capital management:**
  + Companies are encouraged to improve their asset-liability matching and risk management practices to manage the volatility introduced by the new valuation basis, which supports long-term solvency and resilience.
* **Supports policyholder protection:**
  + Up-to-date liability valuations help regulators identify emerging financial weaknesses early and take action before policyholders are put at risk.
* **Reflects economic reality more closely:**
  + Market-based valuation ensures that reported financial positions are not distorted by historical assumptions, providing a more timely and relevant financial picture for decision-making.
* **Encourages prudent product pricing:**
  + The use of current discount rates may discourage underpricing of long-term guarantees by ensuring that future obligations are not underestimated, promoting long-term sustainability.

Overall, the change aims to enhance financial soundness, transparency, and market discipline across the insurance industry.