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https://www.100test.com/kao_ti2020/84/2021_2022_SOA_E7_9C_9F_E9_A2_98C_c50_84127.htm COURSE 8: Fall 2005 - 1 - GO TO NEXT PAGE Investment Morning Session **BEGINNING OF EXAMINATION** INVESTMENT MORNING SESSION Questions 1-4 pertain to the Case Study 1. (6 points) (a) Assess the consistency of the definition of a derivative in LifeCo ’ s operational guidelines with the definition under US GAAP. (b) Describe how LifeCo ’ s Derivative Policy addresses operational and legal risks. (c) Recommend additional controls to better address these risks. COURSE 8: Fall 2005 - 2 - GO TO NEXT PAGE Investment Morning Session Questions 1-4 pertain to the Case Study 2. (5 points) A new actuarial student at LifeCo is very excited about the "profit" your portfolio is generating with MBS. He views "profit" on an MBS bond as the difference between OAS and the liability required interest spread over Treasuries. (a) Explain why "profit" may not equal the difference between OAS and the required interest spread with a Jump Z-bond. (b) Explain why "profit" may not equal the difference between OAS and the required interest spread for more general securities. The student recommends that LifeCo could be more profitable and better durationmatched by replacing the current MBS within the Traditional Life portfolio with Zbonds. Z-bonds, the student argues, have a higher OAS, higher duration, and lower convexity than the current MBS. (c) Evaluate this recommendation. COURSE 8: Fall 2005 - 3 - GO TO NEXT PAGE

Investment Morning Session Questions 1-4 pertain to the Case Study 3. (13 points) LifeCo ’ s management is concerned by the losses arising from the dynamic hedging of the options embedded in its variable annuities. An external report highlighted that the target delta is currently based on a lognormal distribution with the volatility equal to the sample standard deviation of the fund investment return over the past 12 months. (a) Describe the options embedded in the variable annuity product. (b) Describe and compare the following models used to estimate the volatility from past data (i) sample standard deviation (ii) exponentially weighted moving average model (iii) generalized auto-regressive conditional heteroscedasticity (c) Recommend ways to improve the dynamic hedging program. (d) Describe strategies that can be used to minimize the model risk. LifeCo is considering whether to continue its current dynamic hedging program or pursue another risk management strategy. (e) Review alternative strategies for managing the embedded option exposure. (f) Recommend which of these strategies would be most appropriate if the dynamic hedging strategy is discontinued. Justify your recommendation. Investment Morning Session Questions 1-4 pertain to the Case Study 4. (10 points) You have recently been promoted to Chief ALM Officer at LifeCo. The CEO has called a meeting with you and the pricing actuary to discuss the launch of a new universal life product. (a) (2 points) The CEO, an accountant by training, emphasizes the importance of statutory and GAAP measures to determine the economic value of the insurer. Critique this standpoint. (b) (4 points) Explain how to coordinate LifeCo ' s investment and product management strategies for future retentions for this new product to protect LifeCo ' s shareholder value from interest rate risk. (c) (1 point) The pricing actuary expects to increase future credited rates as interest rates rise. Explain how LifeCo ' s investment strategy should be adjusted to protect shareholder value from interest rate risk. (d) (1 point) LifeCo ' s key competitors keep credited rates unchanged regardless of changes in interest rates. Assess how their approach could affect your strategy in part (c). (e) (2 points) Propose a method for LifeCo to implement the changes in parts (c) and (d) that would minimize transaction costs.