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https://www.100test.com/kao_ti2020/84/2021_2022_SOA_E7_9C_9F_E9_A2_98N_c50_84056.htm COURSE 8: Fall 2002 - 1 - GO ON TO NEXT PAGEInvestmentMorning SessionQuestions 1-5 pertain to the Case Study.** BEGINNING OF EXAMINATION **MORNING SESSION1. (6 points) LifeCo ’ s CEO has asked you to analyze the profitability of the InstitutionalPensions GIC line of business and the drivers of its profitability.Asset yields are effective annual, earned, net of investment expenses.The average industry required return on capital: 12.0%The Lehman aggregate bond index, 1999: 6.7%The Lehman aggregate bond index, 1999, adjusted to duration of 3.3: 6.4%The Lehman aggregate bond index, 1999, adjusted to duration of 3.1: 6.3%(a) List the benefits of an integrated asset/liability performance attribution process.(b) Explain the two benchmarks you will use to construct a performance attributionsystem using the above indices.(c) Define each of your performance attribution components and explain theirfunction.(d) Calculate the return of each performance attribution component using thesummary information from the balance sheet for this line of business.Course 8VFall 2002COURSE 8: Fall 2002 - 2 - GO ON TO NEXT PAGEInvestmentMorning SessionQuestions 1-5 pertain to the Case Study.2. (11 points) LifeCo is considering purchasing a Pamp.C insurer.(c) Compare LifeCo ’ s ALM process to DFA.(d) Detail the tasks that LifeCo management must perform in implementing a newALM process.(e) Recommend the best practices that LifeCo should consider adopting in its newALM process.COURSE 8: Fall 2002 - 3 - GO ON TO NEXT PAGEInvestmentMorning SessionQuestions 1-5 pertain to the Case Study.3. (5 points) You are in charge of setting an investment strategy for the surplus account ofLifeCo. The primary investment objective of the surplus account is to safeguardprincipal while seeking to maximize the total rate of return over time. One of the tasks isto determine the asset allocation among various asset classes.As a member of LifeCo ’ s Portfolio Rebalance Subcommittee you have just completed afull evaluation of capital market information in terms of expected returns, standarddeviations and correlations among asset classes. Next, you want to decide on a riskmeasure to be used to construct an efficient portfolio.One of the Subcommittee members has suggested 0selecting portfolio standard deviation(as used by Harry Markowitz in his quadratic optimization) as the risk measure.(a) Evaluate the appropriateness of using standard deviation as the risk measure forthe surplus portfolio.(b) Describe and compare two other alternatives to using standard deviation as therisk measure, and evaluate how the use of each would impact the financialobjectives of LifeCo.(c) Propose the most suitable risk measure for LifeCo and justify your choice.(d) Formulate a mathematical optimization program to construct an efficient portfoliousing the risk measure chosen in (c).COURSE 8: Fall 2002 - 4 - GO ON TO NEXT PAGEInvestmentMorning SessionQuestions 1-5 pertain to the Case Study.4. (10 points) The management of LifeCo is concerned about the duration mismatchreported in the December 31, 1999 ALM report for its traditional and non-traditional lifeproducts segments. It has directed the Corporate Actuarial Department and theInvestment Department to investigate the mismatch and to evaluate the possibility ofusing Z-bonds to reduce it.(a) Criticize the use of modified duration as a measure of interest rate sensitivity forthe two liability segments and the underlying invested assets.(b) Compare the following interest rate sensitivity measures with modified duration:(i) effective duration(ii) effective key-rate duration(c) For equities:(i) interpret the reported modified duration(ii) describe how the Franchise Factor Model can be used to model the interestrate sensitivity of equities(d) Compare the payment profile of the following types of accrual bonds:(i) Z-bonds(ii) Z-PAC(iii) Tricky Z(iv) Jump-Z with cumulative sticky trigger(e) Rank the accrual bonds presented in (d) according to their suitability to helpreduce the duration mismatch of the traditional life product segment. Justify youranswer.COURSE 8: Fall 2002 - 5 - GO ON TO NEXT PAGEInvestmentMorning SessionQuestions 1-5 pertain to the Case Study.