SOCIETY OF ACTUARIES
Strategic Decision Making Exam

Exam CFESDM

AFTERNOON SESSION

Date: Thursday, November 2, 2017
Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 4 questions numbered 7 through 10 for a total of 40 points. The points for each question are indicated at the beginning of the question. Question 8 pertains to the Case Study.

2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.

3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.

2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.

3. The answer should be confined to the question as set.

4. When you are asked to calculate, show all your work including any applicable formulas.

5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam CFESDM.

6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Tournez le cahier d’examen pour la version française.

475 N. Martingale Road
Schaumburg, IL 60173-2226

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CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

BEGINNING OF EXAMINATION
Afternoon Session
Beginning with Question 7

7. (*9 points*) Bank ABC uses collateral agreements to mitigate its counterparty credit risk for an over-the-counter (OTC) derivatives portfolio.

(a) (*1 point*) Analyze the impact on exposure of each of the following features in a collateral agreement:

(i) Threshold

(ii) Minimum transfer amount

(iii) Initial margin

You are given the following:

	Bank ABC
Mark to Market (MTM) of portfolio	1,500
Initial Margin	0
Threshold	200
MTM of collateral held	1,300
Haircut of collateral held	5%
Minimum transfer amount	100
Net Independent Collateral Amount	0

(b) (*1 point*) Calculate the uncollateralized exposure based on this scenario. Show your work.

Now assume that new market information just became available. Because of it, MTM of portfolio has decreased to 1,350. At the same time, the expected volatility of the portfolio has significantly increased.

Assume potential future exposure stays the same.

(c) (*2 points*) Determine the change in exposure at default:

(i) Under the current exposure method.

(ii) Under the standardized approach for counterparty credit risk.

Show your work.

7. Continued

(d) (*1 point*) Describe how your answer to part (c) changes assuming that potential future exposure is affected by the new volatility assumptions.

(e) (*1 point*) Explain the shortcomings of the current exposure method that are addressed by the standardized approach for counterparty credit risk.

(f) (3 *points*)

(i) Describe two ways that Bank ABC can re-design the collateral agreement to lower its exposure at default under the standardized approach for counterparty credit risk. Justify your answer.

(ii) Explain why lowering the exposure may have drawbacks for Bank ABC.

Question 8 pertains to the Case Study.
Each question should be answered independently.

8. (*16 points*) Two models of above average returns are the Industrial Organization (I/O) model and the Resource-based model.

(a) (*1 point*) Define the Industrial Organization model of above average returns.

Three of the assumptions of the I/O model are:

I. The external environment imposes pressures and constraints that determine the correct strategies that would result in above-average returns.
II. Most firms in that industry employ similar strategies and control similar resources.
III. Resources are highly mobile across that industry, so any resource advantages are short-lived.

(b) (*2 points*) Explain why each assumption (I to III) is essential to the I/O model.

Information on Frenz Corporation can be found in Section 4 of the Case Study.

(c) (*3 points*) Assess whether each assumption (I to III) of the I/O model holds for Frenz. Justify each answer with at least one specific example from the Case Study.

(d) (*1 point*) Define the Resources-based model of above average returns.

The assumptions of the Resource-based model are:

IV. Firms acquire resources and develop unique capabilities based on how they combine and use resources.
V. Resources and capabilities are not highly mobile across firms.

(e) (*2 points*) Explain why each assumption (IV and V) is essential to the Resource-based model.

(f) (*2 points*) Assess whether each assumption (IV and V) holds for Frenz. Justify each answer with at least one specific example from the Case Study.

8. Continued

Frenz is considering two strategies:

A. Enhancing its brand loyalty with existing customers by investing in development of a state-of-the-art smartphone app whose scope is currently not offered by any of Frenz's competitors.

B. Striking a deal with the Vietombian government for exclusive rights to distribute its Vietombian bean whose flavor is comparable to the premier super-premium coffee bean, the *Costa Rica Finca Palmilera*.

In order to ultimately recommend one of these two strategies:

(g) (*5 points*)

(i) Identify the model that applies to Frenz's current competitive position. Justify your answer.

(ii) Assess strategy A against your answers for part (i).

(iii) Assess strategy B against your answers for part (i).

(iv) Recommend either Strategy A or B. Justify your recommendation.

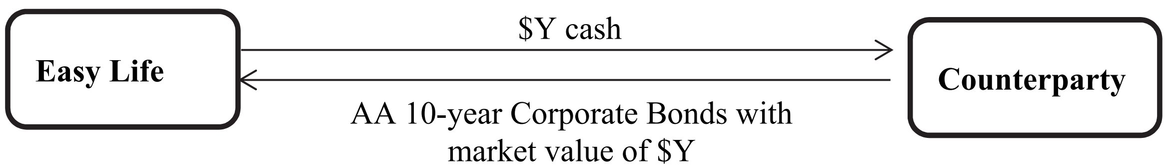
9. (*11* points) You are the CRO of Easy Life Insurance Company (Easy Life). Easy Life uses economic capital as its primary risk measure.

In order to maximize return on economic capital, Easy Life intends to dispose of its 30-year Treasury STRIPS (government issued zero-coupon bonds) which have a market value of $Y.

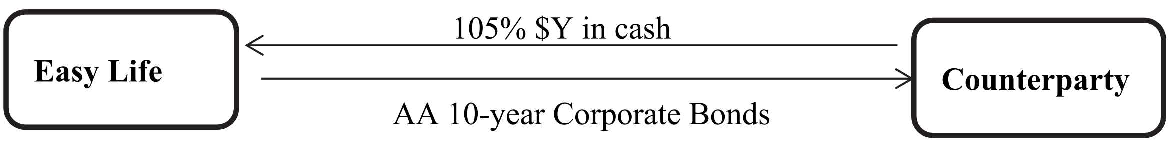
You are asked to evaluate two options:

> **Option I:** Sell the Treasury STRIPS for $Y cash and use the proceeds to complete a one-year collateral loan agreement with Counterparty. In the collateral loan agreement:

Time 0

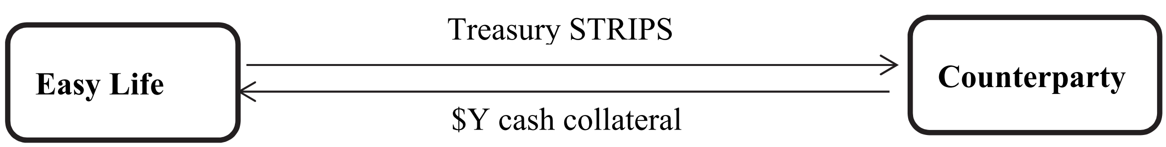


Time 1



> **Option II:** Enter a security lending agreement with Counterparty as shown below:

Time 0



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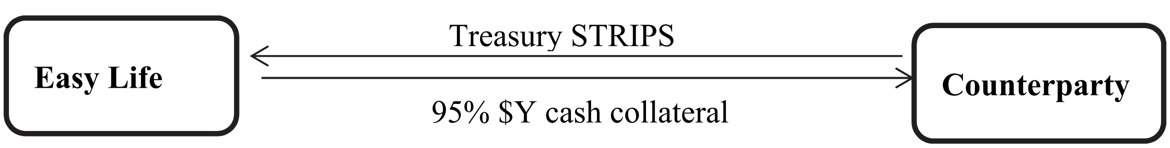

9. **Continued**

(a) (*2 points*) Explain how Easy Life is exposed to counterparty risk:

(i) Assuming Easy Life pursues option I.

(ii) Assuming Easy Life pursues option II.

(b) (*1 point*) Describe the change in Easy Life's interest rate risk as a result of either option.

(c) (*2 points*) Assess the impact on economic capital due to the change in interest rate risk described in part (b).

Easy Life's CEO made the following comments on the two options:

- In option I, Easy Life will be able to gain a risk-free investment return on the collateral loan agreement.
- In option II, Easy Life's economic surplus will increase by the amortized gain on the Treasury STRIPS in one year. Even if interest rates decrease further, no other impacts on the economic balance sheet and earnings should be expected.

(d) (*4 points*) Critique the CEO's comments. Justify your answer.

Consider a scenario in which current treasury yields will likely decrease in the near future.

(e) (*2 points*) Recommend whether Easy Life should implement Option I or Option II. Justify your answer.

10. (*4 points*) The table below lists loan information for clients of Bank XYZ.

Assume loan amounts are the risk-free value, i.e., have not yet been adjusted for credit risk.

Client Company	Loan Amount ($ billion)	CVA ($ billion)
Company #1	13	-2
Company #2	7	-1
Companies #3 - #1002	0.08 each	-0.01 each
Total	100	

The CRO of Bank XYZ comments that the bank is not exposed to much counterparty risk, because its portfolio has a large number of counterparties.

(a) (*1 point*) Critique the CRO's comment.

The portfolio companies are as follows:

A. Company #1 is a technology company in California.
B. Company #2 is a hotel chain in Europe.
C. Companies #3 - #1002 are all mining companies in Canada.

The CRO recommends using CVA to manage counterparty risk for Bank XYZ.

(b) (*2 points*) Evaluate the CRO's recommendation. Show your work.

(c) (*1 point*) Recommend an enhancement to using only CVA to better manage counterparty risk for Bank XYZ. Justify your answer.

****END OF EXAMINATION****
Afternoon Session

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