Falmouth Advisers Case Scenario

Dennis Chatham and Edgar Town, CFA, are co-directors of research at Falmouth Advisers, LLC, a firm that specializes in managing corporate credit fixed-income portfolios. Chatham has used traditional fundamental credit analysis in his work but is now being challenged by Town to incorporate quantitative credit models in the investment process. They debate the merit of credit analysis models during Falmouth's monthly investment committee meeting.

Chatham states at the meeting that he believes credit spreads are too wide given that they exceed his analysts' estimates for the probability of default and loss given default. Town retorts that he has developed a credit analysis model that incorporates two additional components to measure credit risk. He presents an explanation of his model to the committee.

Town then recommends to the committee that Falmouth develop its own internal credit rating model that gives the analysts the ability to change ratings frequently to reflect changes in the business cycle. These internal ratings can provide an ordinal ranking of corporate borrowers by credit riskiness to enhance the security selection process in portfolios. He believes the internal ratings will provide an edge because the public rating agencies keep their ratings stable over time, which does not correspond to default probabilities that are not constant over the cycle.

Chatham asks for Town's opinion about the use of structural models to assess credit risk. Town makes the following points regarding structural models:

Point 1: Structural models use fundamental data to assess credit risk by applying option pricin
Shareholders have limited liability, and thus owning equity is equivalent to owning a E
put option on the company's assets.

Point 2: The option analogy provides a valuation model that is useful for understanding debt's
of default, its loss given default, its expected loss, and the present value of the expec

Point 3: To determine credit risk in this model, some assumptions do have to be made, which
that the riskless rate of return is constant over time and that the value of the company
have a lognormal distribution.

Chatham asks if reduced form models are similar to structural models. Town states that he believes reduced form models are superior to structural models and very useful in valuing risky corporate debt. He makes the following points regarding reduced form models:

Point 4: Default probabilities and loss given default can be modeled as a function of the state
economy, but whether the company actually defaults is an idiosyncratic risk.

Point 5: Reduced form models value risky corporate debt by using risk-neutral probabilities an risk-free rate of interest that is stochastic.

Town, makes one final statement to the committee: “Each of these models have inherent strengths and weaknesses. I have summarized these for the committee in Exhibit 1.”

EXHIBIT 1 MODEL STRENGTHS AND WEAKNESSES

Criteria	Structural	Reduced Form
1. Requires specification of company’s balance sheet	Yes = Strength	No = Weakness
2. Assumes assets trade in liquid market	Yes = Weakness	No = Strength
3. Type of input data	Historical = Weakness	Current Market = Strength

Finally, Chatham asks Town if he can provide a quantitative measure for the present value of a bond’s cash flow considering credit risk. Town indicates that he can demonstrate the calculation for a corporate bond that has promised to make a single payment of $1,050 in six years. A duration equivalent Treasury yields 1.5%, and the corporate bond offers a spread over Treasuries of 150 bps.

1Q. What additional component is Town least likely to include in his model to measure credit risk?

A. Recovery rate.
B. A risk premium.
C. Time value of money.

2Q. Are Town’s comments regarding internal and external rating methodologies most likely correct?

A. Yes.
B. No, he is incorrect regarding ordinal rankings.
C. No, he is incorrect regarding public rating agencies.

3Q. Which of Town’s points regarding structural models is least likely correct?

A. Point 2
B. Point 3
C. Point 1

4Q. Is Town most likely correct with regard to his points regarding reduced form models?

A. Yes.
B. No, he is incorrect with regard to Point 5.
C. No, he is incorrect with regard to Point 4.

5Q. Based on Exhibit 1, Town is most likely correct with regard to which criteria for model strengths and weaknesses?

A. Criteria 1
B. Criteria 3
C. Criteria 2

6Q. The present value of the expected loss due to credit risk for the corporate bond in Town's demonstration is closest to?

A. $80.85.
B. $170.62.
C. $89.77.

Solution

1：A is correct. The recovery rate is the percentage amount that would be received if the bond defaults. The recovery rate is reflected in the model already because 100% minus recovery equals loss given default. Town would add a risk premium and the time value of money to measure risk in credit spreads. B and C are incorrect because this is a component in the model to explain credit spreads.

2：A is correct. A key weakness with public credit rating agency ratings is that the agencies are motivated to maintain stability in their ratings over time to reduce debt market volatility. This means they rate through a business cycle giving rise to a non-constant relationship over time between credit ratings and default probabilities. An objective of internal ratings is to create an ordinal ranking of borrowers by riskiness as an aid to security selection and vary the ratings throughout the business cycle.

B is incorrect because internal credit ratings do provide ordinal rankings.

C is incorrect because rating agencies strive to maintain stable ratings over the cycle.

3：C is correct. Town is incorrect with regard to Point 1. A key insight of the structural model is that holding the company's equity is economically equivalent to owning a European call option on the company's assets.

A is incorrect because Point 2 is correct.

B is incorrect because Point 3 is correct.

4：A is correct. Town' s Points 4 and 5 regarding reduced form models are correct. B and **C** are incorrect because this statement is correct.

5：C is correct. Town is correct with regard to Criteria 2. The correct model strengths and weaknesses are provided in the table below.

Criteria	Structural	Reduced Form
1. Requires specification of company's balance sheet	Yes = Weakness*	No = Strength*
2. Assumes assets trade in liquid market	Yes = Weakness	No = Strength
3. Type of input data	Current Market* = Strength*	Historical* = Strength*

* Indicates incorrect data in Exhibit 1

A and B are incorrect because only Criteria 2 is correct (see table).

6： A is correct. The discount factor for the Treasury security is $1/1.015^6$ = 0.9145; adjusting for credit risk, the discount factor is $1/1.03^6$ = 0.8375. Present value of corporate bond = $1,050 × 0.8375 = $879.38; present value of Treasury bond = $1,050 × 0.9145 = $960.23. The difference is the present value of the expected loss due to credit risk, $879.38 − $960.23 = −$80.85.

B is incorrect because it calculates the difference between the maturity value of 1,050 and the present value of the corporate bond adjusting for the credit spread and the risk-free rate: 1050 − 879.38 = 170.62.

C is incorrect because it compares the par value with the bond discounted by the risk-free rate: 1050 − 960.23 = 89.77.