

Set 1 Questions

1. In a CDS contract, the party *that* agrees to make a series of fixed periodic payments to the counterparty over the contract term in return for a promise to be compensated by the counterparty in case of default is *best* known as:
 - A. the credit protection buyer.
 - B. the credit protection seller.
 - C. an option seller.
2. An advantage of an index CDS is that it permits investors to take positions on:
 - A. the credit risk of a particular bond issuer.
 - B. ETFs.
 - C. the credit risk of a combination of borrowers.
3. KLD Corp. issues bonds with a credit spread of 700 bps. A 10-year CDS against these bonds bears an annual coupon rate of 5%. Which of the following statements is *least likely* correct?
 - A. The protection buyer agrees to make annual payments of 5% over the life of the CDS.
 - B. The protection seller promises to make annual payments amounting to 5% over the life of the contract.
 - C. The protection buyer will make an upfront payment to the protection seller because the standard rate is lower than the CDS credit spread.
4. The three main types of credit events are:
 - A. bankruptcy, voluntary restructuring, issuance of equity.
 - B. IPO, liquidation, litigation.
 - C. bankruptcy, involuntary restructuring, failure to pay.
5. A company files for bankruptcy, triggering CDS contracts. It has two series of senior bonds outstanding: Bond P, which is trading at 40% of par, and Bond Q, which is trading at 50% of par. The recovery rate for *both* CDS contracts is *closest* to:
 - A. 50%.
 - B. 40%.
 - C. 60%
6. The *most* common settlement method for CDS following a credit event declaration is:
 - A. cash settlement.
 - B. physical settlement.
 - C. bond delivery.
7. Consider a company with a constant hazard rate of 3% per quarter. An investor sells 5-year CDS protection on the company with payments made quarterly over the life of the CDS contract. The conditional probability of survival for the second quarter, and the probability of default (sometime) during the first two quarters are *closest* to:

<u>Conditional probability</u>	<u>Probability of default</u>
<u>of survival for 2nd quarter</u>	<u>during first two quarters</u>
A. 3%.	97%.

- B. 97%.
 - C. 94%.
 - 6%.
 - 12%.
8. The upfront payment at the start of the CDS contract is paid by the protection buyer to the protection seller if:
 - A. the upfront payment is less than zero.
 - B. value of premium leg is greater than the value of protection leg.
 - C. the present value of protection leg is greater than present value of premium leg.
 9. An upward-sloping credit curve *most likely* indicates:
 - A. a greater possibility of default in later years.
 - B. a greater possibility of default in earlier years.
 - C. that the probability of default will remain unchanged through time.
 10. A company's 10-year CDS trades at a credit spread of 600 bps, and the 5-year CDS trades at a credit spread of 350 bps. Suppose the 10-year spread widens by 120 bps, whereas the credit spread of the 5-year CDS remains unchanged. The change in the credit curve suggests that:
 - A. the company's longer-term creditworthiness has improved.
 - B. the company's longer-term creditworthiness has deteriorated.
 - C. the company has become riskier than before in the short term.
 11. Consider two sports car manufacturers, Alpine and Delfino. The credit quality of Alpine is expected to improve over the next quarter and that of Delfino is anticipated to weaken over the same time period. An investor can benefit from this scenario by:
 - A. going short both Alpine and Delfino CDS contracts.
 - B. going short an Alpine CDS and long a Delfino CDS.
 - C. going long an Alpine CDS and short a Delfino CDS.
 12. Angela owns some bonds issued by Alcarta Corp. She has become concerned about a default in the long-run but is not worried about default in the short-term. Alcarta's two-year CDS trades at 300 bps, and the five-year CDS trades at 500 bps. Which of the following curve trades would *best* hedge her risk?
 - A. Going short (buying protection) in the five-year CDS, and going long (selling protection) in the two-year CDS.
 - B. Going long (selling protection) in the five-year CDS, and going short (buying protection) in the two-year CDS.
 - C. Going short in the five-year CDS, while taking no position in the two-year CDS.

Set 1 Solutions

1. A is correct. A CDS contract has a **credit protection buyer** and the **credit protection seller**. The credit protection buyer makes a series of fixed payments to the seller over the contract life in return for a promise to be compensated by the protection seller for credit losses resulting from a default. Section 2. LO.a.
2. C is correct. An index CDS allows investors to take positions on the credit risk of a group of borrowers (companies). B is incorrect because CDS are written on debt instruments whereas exchange-traded funds are combinations of equities of different companies. Although an index CDS is traded in the same way ETFs are traded. A is incorrect because CDS on one particular bond issuer is called a single-name CDS. Section 2.1. LO.a.
3. B is correct. A 5% coupon rate implies that the protection buyer agrees to make annual payments of 5% over the life of the contract. If the CDS coupon rate (5%) is lower than the credit risk of the entity (7%), the protection buyer makes an upfront payment to the protection seller. A & C are correct statements. Section 2.2. LO.a.
4. C is correct. The three types of credit events are: bankruptcy, failure to pay, involuntary restructuring. Section 2.3. LO.b.
5. B is correct. The recovery rate is 40% for both CDS contracts, since Bond P is the cheapest-to-deliver obligation. Section 2.4. LO.b.
6. A is correct. Cash settlement is the most common settlement method for CDS contracts. Physical settlement of CDS involving actual delivery of debt instrument is uncommon. Section 2.4. LO.b.
7. B is correct. The conditional probability of survival for the second quarter is 97%, because the hazard rate is constant at 3% each quarter. The probability of survival is 97%, in the first quarter and the conditional probability of survival through the second quarter is also 97%. The probability of survival through the second quarter = $97\% \times 97\% = 94.09\%$. Hence, the probability of default sometime during the first two quarters = $1 - 94.09\% = 5.91\%$. Section 3.1. LO.c.
8. C is correct. Upfront payment is defined as: Present value of protection leg – Present value of premium leg. If the difference between the present value of protection leg and present value of premium leg is greater than zero, then the protection buyer pays the protection seller at the initiation date of the CDS contract. If the difference is less than zero, the upfront payment is made by the protection seller to the protection buyer. Section 3.1. LO.c.
9. A is correct. An upward-sloping credit curve indicates a greater probability of default in later years. B is incorrect because a downward-sloping curve reflects default probability in earlier years. C is incorrect because a constant probability of default will result in flattening of the credit curve. Section 3.2. LO.d.

10. B is correct. The credit curve change shows that the company is not any riskier than before in the short term (5 years). However, its longer-term (10 year) creditworthiness has deteriorated. Section 3.2. LO.d.
11. C is correct. In the CDS market, because the credit protection buyer promises to make future payments, he/she is regarded as being short and the credit protection seller who receives payments till a credit event is triggered, is considered as being long. If the credit quality on an underlying debt improves, the credit protection seller benefits. On the contrary if the credit quality deteriorates, the credit protection buyer benefits. Because the credit quality of Alpine is expected to improve and Delfino is expected to weaken, an investor should take a long position in Alpine CDS and a short position in the Delfino CDS. Section 4.1. LO.e.
12. A is correct. Angela anticipates steepening of curve, and can hedge the default risk by positioning herself short (buying protection) in the five-year CDS while going long in the two-year CDS (selling protection). B is incorrect because Angela is concerned about default in the long-run. C is incorrect because going short one CDS is more expensive and riskier than a curve trade. Section 4.1. LO.e.

Set 2 Questions

The following information relates to questions 1 – 3.

Sam Bright, chief investment officer M&R Investment Bank, is reviewing the bank's fixed-income portfolio, specifically IJI bond - a £5 million five-year senior unsecured bond. A few months after the purchase of the IJI bond, Bright had purchased a £5 million CDS with a standardized coupon rate of 5%. The reference obligation of the CDS is the IJI bond. Bright asks Dave Roberts, credit risk analyst, about the settlement protocol on IJI bonds if the borrower defaults on its interest payments.

Robert collects the following information on the IJI bonds currently outstanding:

Bond I: A three-year senior unsecured bond trading at 30% of par

Bond II: A five-year senior unsecured bond trading at 40% of par

Bond III: A five-year subordinated unsecured bond trading at 20% of par

A month later, IJI fails to make a scheduled interest payment on the outstanding subordinated unsecured obligation after a grace period; but no bankruptcy is filed. Bright asks Roberts to determine if IJI experienced a credit event.

1. If IJI experienced a credit event, the recovery rate for the CDS contract is:
 - A. 30%.
 - B. 40%.
 - C. 20%.
2. If IJI experienced a credit event, the settlement preference would *most likely* be:
 - A. a physical settlement.
 - B. a cash settlement.
 - C. indifferent between a cash or physical settlement.
3. Which of the following statements is *most likely* correct? Roberts conclusion is:
 - A. IJI experienced a credit event.
 - B. IJI did not experience a credit event because it did not file for bankruptcy.
 - C. IJI did not experience a credit event because it still has to make its principal payment.
4. Shehla Muneer, director research, makes the following three comments regarding the credit curve to the analysts covering the CDS market for various bonds.

Comment I: "The credit curve is similar to the term structure of interest rates, but it applies to non-government borrowers and considers credit risk.

Comment II: The curve is impacted by various factors, with hazard rates being the most important.

Comment III: Downward-sloping curves are less common, because they are a result of long-term stress in the financial markets."

Which of Muneer's comments is *least likely* correct?

- A. I.

- B. II.
- C. III.

The following information relates to questions 5 - 7.

Jenna May, a fixed-income portfolio manager at Crossby Advisors, asks Asa Hideaki, a derivatives analyst, to determine if an upfront payment would be required and if so calculate the premium amount on a 5-year CDS on BJA Industries. Hideaki collects the information for the CDS given in Table 1.

Table 1: Selected Information on 5-Year CDS on BJA Industries

Credit Spread	300 bps.
Duration	3 years
Coupon Rate	1%

May purchases the 5-year CDS on BJA Industries bond. After buying the 5-year CDS, the credit spread for BJA widens by 250 basis points. May wants to unwind its CDS position on BJA Industries by entering into new offsetting contracts.

5. Based on Table 1, the upfront premium as a percent of the notional required to buy the 5-year CDS on BJA Industries is *closest* to:
 - A. 2%.
 - B. 6%.
 - C. 9%.
6. If May enters into new offsetting contracts after purchasing the CDS on BJA, the firm would *most likely*:
 - A. gain from the CDS position.
 - B. lose from the CDS position.
 - C. neither gain nor lose from the CDS position
7. The price change in the 5-year CDS on BJA debt, after widening of the credit spread is *closest* to:
 - A. 2.5%.
 - B. 3.5%.
 - C. 7.5%.

The following information relates to questions 8 - 10.

Akio Hiroshi, chief credit analyst at NIPO Investments, reviews ASCS Corporation's five-year bond currently yielding 6%. Hiroshi notices that a comparable five-year CDS contract has a credit spread of 3.75%. Since Libor is 2.0%, Hiroshi considers a basis trade to take advantage of the pricing difference between the ASCS's bonds and CDS.

8. Based on the information above, 5-year ASCS bond's credit spread is:
 - A. 2.00%.
 - B. 2.25%.

- C. 4.00%.
9. The basis trade that would *most likely* take advantage of the current pricing difference is:
- A. purchase the 5-year comparable CDS and go long the 5-year ASCS bond.
 - B. purchase the 5-year comparable CDS and short the 5-year ASCS bond.
 - C. purchase the 5-year synthetic CDO and sell the 5-year CDS.
10. Based on the basis trade, for ASCS, if convergence occurs in the bond and CDS markets, the trade will capture a profit *closest* to:
- A. 0.25%.
 - B. 2.25%.
 - C. 1.75%.
11. Brian Miller, chief investment officer Greer Advisors, which specializes in derivatives, buys \$600 million of protection on the CDX HY index. Miller believes that the creditworthiness of a few of the components will improve, hence he takes a position on a portion of the credit risk in each. For ASIX Glass, he sells \$5 million of single-name CDS protection. The credit quality of ASIX subsequently improves.
- Greer Advisors' net notional exposure to ASIX Glass is *closest* to:
- A. \$2.6 million.
 - B. \$1.0 million.
 - C. \$0.5 million.
12. Brad Newman, chief credit analyst is interviewing Penny Kimmel, an analyst. Newman questions Kimmel, "Suppose an investor sells five-year CDS protection on Company X with the premiums paid quarterly over the next five years. What is the probability of survival for Company X, assuming a constant hazard rate of 3% per quarter?"
- The probability of survival through the second quarter is *closest* to:
- A. 94.09%.
 - B. 5.91%.
 - C. 96.04%.

Set 2 Solutions

1. A is correct. Bond I is the cheapest-to-deliver obligation, trading at 30% of par, so the recovery rate for the CDS contract is 30%. Although Bond III trades at a lower dollar price, it is subordinated and, therefore, does not qualify for coverage under the senior CDS. Section 2.1. LO.b.
2. B is correct. A cash settlement would be likely preferred by M&R. M&R owns Bond II (trading at 40% of par), which is worth more than the cheapest-to-deliver obligation (Bond I trading at 30% of par). Therefore, M&R can cash settle for £3.5 million $[(1 - 30\%) \times 5 \text{ million}]$ on its CDS contract and sell Bond II it owns for £2 million, for total proceeds of £5.5 million. If M&R were to physically settle the contract, only £5 million would be received, the face amount of the bonds and they would deliver Bond II.
A is incorrect because if M&R were to physically settle the contract, they would receive only £5 million, which is less than the amount obtained from a cash settlement. C is incorrect because M&R would receive more if they were to cash settle, so they would not be indifferent. Section 2.4. LO.b.
3. A is correct. “JJI experienced a credit event when it failed to make the scheduled coupon payment on the outstanding subordinated unsecured obligation. Failure to pay, a credit event, occurs when a borrower does not make a scheduled payment of principal or interest on *any* outstanding obligations after a grace period, even without a formal bankruptcy filing.” Section 2.3. LO.b.
4. C is correct. Downward-Sloping credit curves imply a greater probability of default in earlier years. They are less common, and usually occur due to severe near-term stress in the financial markets. Section 3.2. LO.d.
5. B is correct. $\text{Upfront Premium} = (\text{Credit spread} - \text{Fixed coupon}) \times \text{Duration}$.
 $\text{Upfront Premium required to be paid for 5-year CDS on BJA} = [(300 - 100) \times 3 = 6\% \text{ of the notional}]$. Section 3.3. LO.c.
6. A is correct. Crosby Advisors purchased protection, hence are economically short and benefit from an increase in the company’s spread. Because after purchasing the protection, the credit spread widened by 250 basis points. Therefore, the firm realizes a gain by entering into a new offsetting contract (sells the protection for a higher premium to another party). A loss to the credit protection buyer would be if the credit spread decreases. Section 3.4. LO.d.
7. C is correct. $\% \text{ Change in 5-year CDS price} = \text{Change in spread in bps} \times \text{Duration} = 250 \times 3 = 7.5\%$. Section 3.4. LO.d.
8. C is correct. The credit spread = ASCS bond yield – Libor = 6.0% – 2.0% = 4.0%. Section 4.2. LO.e.
9. A is correct. The 5-year ASCS bond and the comparable CDS imply different credit spreads. Credit risk is cheap in the CDS market (3.75%) compared to the bond market (4.0%).

Therefore, an investor should buy protection in the CDS market at 3.75%, and go long the ASCS bond, thereby earning 4.0% for assuming the credit risk. Section 4.2. LO.e.

10. A is correct. The credit risk is cheap in the CDS market relative to the bond market. If the CDS and the bond are both purchased, and convergence occurs, the profit captured by trade will be the differential in the two markets $4.0\% - 3.75\% = 0.25\%$. Section 4.2. LO.e.
11. B is correct. Greer Advisors is short \$6 million notional (\$600 million/100) through the index CDS and is long \$5 million notional through the single-name CDS. His net notional exposure is \$1 million. Section 2.5. LO.d.
12. A is correct. The probability of survival through the first quarter is 97%, and the conditional probability of survival through the second quarter is also 97%. The probability of survival through the second quarter = $97\% \times 97\% = 94.09\%$. Section 3.1. LO.c.