

**QUESTION 8 HAS THREE PARTS FOR A TOTAL OF 14 MINUTES**

Helen Baker, CFA, invests in distressed securities. Specifically, she creates an arbitrage by shorting the underlying company equity and purchasing a long position in the company's distressed debt. Baker concentrates on sound companies that have significantly exceeded their debt capacity. Baker's strategy is to capitalize on her knowledge of, and patience for, particular situations. To this end, she takes advantage of creditors that want to liquidate securities of companies that are in bankruptcy or near bankruptcy. In addition, Baker exploits the fact that distressed companies lack adequate research coverage. Baker buys the distressed debt for 50 cents or less on the dollar.

- A. Assuming the distressed company's prospects improve, **explain** how Baker's arbitrage would perform.

**(6 minutes)**

- B. **Describe** the following three sources of risk in distressed debt investing, and **comment** on the relative importance of each.

- i. Event risk.
- ii. Market liquidity risk.
- iii. Market risk.

**(6 minutes)**

- C. **Describe** J factor risk as it relates to distressed debt.

**(2 minutes)**

**QUESTION 8 (14 points)**

**Source: Study Session 12**

A. 6 points

2 points—If the company's prospects improve, both the market price of distressed bonds and the market price of the issuing company's stock will appreciate. Baker would profit on the bonds, but have some offsetting loss on the short stock position.

1 point—As the company's situation improves, the debt should appreciate more than the stock due to the debt's senior credit position.

2 points—Since the arbitrage is long bonds and short the stock, it will earn the difference between the accrued interest on the bonds versus any dividends paid on the stock. In a distressed situation, dividends will have probably been suspended.

1 point—Typically, to conserve cash, any company in a distressed situation will not quickly resume paying a dividend, allowing the distressed debt investor to earn the accrued interest without having to pay dividends on the short stock position.

**Source: Study Session 12**

B. 6 points

- i. Event risk—2 points—can be a significant risk, but because the event is usually related to the specific company situation, this risk is not highly correlated with overall stock or bond market returns.
- ii. Market liquidity risk—2 points—Lack of liquidity is a significant risk of distressed debt. There are few participants in the distressed debt markets. To motivate a transaction, the seller would be forced to lower her price significantly. In addition, implementing a successful business plan can take years. Investors must be willing to accept the long-term nature of distressed debt investing. Otherwise, full return potential of the investment will not be realized.
- iii. Market risk—2 points—least important of the three, since most distressed debt returns are situation-specific and not highly correlated with market trends.

**Source: Study Session 12**

C. 2 points

J factor risk refers to the effect of the judge on the results of any bankruptcy proceeding. The judge may rule more in favor of debt or equity securityholders, and thus have a dramatic impact on their respective returns.

**QUESTION 9 (12 points)**

**Source: Study Session 11**

A. 6 points

$\alpha = [(5.0 - 6.5) + (-0.5 - -1.5) + (8.8 - 8.1) + (3.2 - 3.5)] / 4 = -0.025\%$  (3 points)

information ratio =  $\alpha$ /tracking error

information ratio =  $-0.025 / 1.4 = -0.01786$  (3 points)

**QUESTION 15 HAS SIX PARTS FOR A TOTAL OF 18 MINUTES**

DiggCo is a multinational copper mining enterprise with its base of operations in the U.S. Therefore, the company follows U.S. GAAP accounting rules and reports its financial results every quarter. DiggCo operates several open pit copper mines in the U.S., Canada, Australia, and South Africa. The company's CFO, William Pitt, is analyzing the company's existing and proposed derivative transactions. Each of the transactions under consideration is detailed below:

Existing Transactions

*Fuel Cost Hedge* – DiggCo incurs significant diesel fuel costs associated with its extraction and refinement machinery. Over the last few years, this cost has risen steadily in all of the company's mining facilities. Fuel is generally procured by each mine facility locally. To mitigate the rising fuel costs, DiggCo entered into a series of long futures contracts on crude oil to be delivered in Oklahoma. The contracts correspond to the timing of fuel purchases. The only futures contract still outstanding expires in nine months and has a contract price of \$59.87.

*Debt Refinancing Hedge* – DiggCo is forecasting a significant decline in long-term interest rates over the next year. Accordingly, the company plans to refinance its long-term, refundable, non-callable debt, after rates have declined, in order to decrease its monthly debt service costs. To hedge the expected refinancing risk, DiggCo entered into a long call position on its 10-year 9% annual coupon bonds. The option contract expires in one-year, has a notional principal equal to \$650 million (the face value of DiggCo's bonds), and has a strike price of \$0.95 per \$1 par.

*Mineral Rights Leasing Hedge* – DiggCo does not own the mineral rights in any of the company's Australian mining facilities. Therefore, the company must lease the mineral rights from the Australian government, the owner of the mineral rights in the regions mined by DiggCo. According to the lease agreement, DiggCo must make fixed payments denominated in Australian dollars on a quarterly basis in order to retain its mining rights. Four years ago, the company established a 5-year pay fixed USD, receive floating AUD currency swap to guard against an expected appreciation in the Australian dollar relative to the U.S. dollar. The swap requires quarterly payments.

Proposed Transactions

*Copper Price Hedge* – Global copper prices have increased rapidly over the last two years, allowing DiggCo to report record profits and expand its operations and build copper inventories. Global demand for copper has recently been slowing and DiggCo expects to see a slow downward trend in copper prices over a 3- to 5-year period. The company is considering a short position in a 3-year, financially settled commodity swap with annual payments.

*Reclamation Project Hedge* – One of the mining sites in South Africa is expected to be closed in five years. Reclamation on the mining site will begin immediately after the closing of the mine in order to restore the environmental quality of the area as quickly as possible. The reclamation project will require an initial cash flow of 1 billion South African rand (ZAR). DiggCo is considering entering into a currency forward to reduce the risk of depreciation of the U.S. dollar relative to the rand between now and the time the reclamation project begins.

Pitt has compiled his analysis of DiggCo's derivative transactions in a report to the firm's executive committee. The report also provides some general background on accounting requirements for reporting hedge transactions. Excerpts from the report are included below:

“According to FAS 133 and IAS 39, if DiggCo wants to account for the proposed transactions as hedges, at inception the transaction must be expected to be effective and the firm must state how hedge effectiveness will be measured. In addition, DiggCo must meet certain disclosure requirements for all types of hedges, including disclosure of the objective of holding the derivative position, any hedging positions that are less than fully effective, and where the net gain or loss on the hedging instrument is reported in earnings.

“Certain hedges already in place at DiggCo have varying degrees of effectiveness. The mineral rights leasing hedge has been and is expected to continue to be fully effective. Because of this effectiveness, gains and losses on the hedging instrument will continue to accumulate in the comprehensive income account on the balance sheet but will never be recognized in reported earnings.

“The debt refinancing hedge has only been partially effective, resulting in losses in the option-hedging instrument that more than offset gains in the underlying bond. As a consequence, reported earnings have been lower than they would have been if the debt refinancing hedge had been fully effective.

“Due to an unexpected divergence in the price of diesel fuel and the price of crude oil, the effectiveness of the fuel cost hedge has been declining over the last three reporting periods. DiggCo will need to declare the fuel cost hedge ineffective and terminate the hedge in the next reporting period. The termination of the hedge would require that accumulated losses in comprehensive income related to the effective portion of the fuel cost hedge be recognized in earnings immediately, rather than when the transaction occurs in nine months.”

- 15.1. Determine whether DiggCo’s fuel cost hedge would *most likely* be considered an economic or accounting hedge and whether it would *most likely* be classified as a cash flow or fair value hedge for accounting purposes.

<u>Hedge type</u>	<u>Accounting classification</u>
A. Accounting	Fair value
B. Accounting	Cash flow
C. Economic	Fair value
D. Economic	Cash flow

- 15.2. Determine which type of accounting classification is *most appropriate* for DiggCo’s debt refinancing hedge and its mineral rights leasing hedge.

<u>Debt refinancing</u>	<u>Mineral rights leasing</u>
A. Cash flow	Fair value
B. Cash flow	Cash flow
C. Fair value	Fair value
D. Fair value	Cash flow

- 15.3. Determine which type of accounting classification is *most appropriate* for DiggCo’s copper price hedge and its reclamation project hedge.

<u>Copper price</u>	<u>Reclamation project</u>
A. Cash flow	Fair value
B. Cash flow	Cash flow
C. Fair value	Fair value
D. Fair value	Cash flow

- 15.4. In his report to DiggCo’s executive committee, Pitt makes several comments regarding the accounting requirements of FAS 133 and IAS 39. Which of the following statements *best describes* why Pitt’s comments are *incorrect*?

- A. For some hedges, it is not necessary to disclose where in earnings the net gain or loss on the hedge is reported.
- B. Hedge effectiveness need only be expected to occur within the life of the hedge period, not at the inception of the hedge.
- C. Disclosure of hedging objectives would reveal proprietary operating information to the public and are therefore unnecessary.
- D. For certain hedges, providing disclosure of the ineffective portion of the hedge is unnecessary since the ineffective portion is reflected in current earnings.

- 15.5. **Determine** whether Pitt's comments in his report regarding the effectiveness of the mineral rights leasing hedge and the debt refinancing hedge are *most likely correct* or *incorrect*.
- | <u>Mineral rights leasing</u> | <u>Debt refinancing</u> |
|-------------------------------|-------------------------|
| A. Correct                    | Correct                 |
| B. Correct                    | Incorrect               |
| C. Incorrect                  | Correct                 |
| D. Incorrect                  | Incorrect               |
- 15.6. In his report to DiggCo's executive committee, Pitt makes a comment regarding the effectiveness of the fuel cost hedge. Which of the following statements *best describes* why Pitt's comment is *incorrect*?
- A. The hedge termination would not require recognition of accumulated gains or losses in earnings for nine months.
  - B. Only the accumulated gains or losses related to the ineffective portion of the hedge would need to be recognized immediately.
  - C. Termination of the hedge would actually require retroactively applying the accumulated gains or losses related to the effective portion of the hedge.
  - D. There would be no accumulated gains or losses related to the fuel cost hedge since this type of hedge requires current earnings recognition of all hedging gains or losses.

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conditional heteroskedasticity. The null hypothesis states there is no conditional heteroskedasticity. In this regression, the squared residuals proxy for the error variance. If the  $t$ -statistic for the slope is significant, we reject the null hypothesis and conclude that the error variance changes over time (i.e., that the autoregressive error terms exhibit conditional heteroskedasticity). If the  $t$ -statistic is not significant, we do not reject the null hypothesis. The  $t$ -statistic for the slope in Figure 4 equals  $0.28 / 0.185 = 1.51$ , which is not statistically significant. Therefore, we cannot reject the hypothesis that the data are homoskedastic.

- 14.4. A The most recent change in sales reported in Figure 5 was \$50 million (e.g., an increase from \$950 million to \$1,000 million). Therefore, the one-step-ahead forecast is  $20 + 0.1(50) = \$25$  million, and the two-steps-ahead forecast is  $20 + 0.1(25) = \$22.5$  million.
- 14.5. A The mean reverting value equals the intercept divided by 1 minus slope =  $20 / (1 - 0.10) = 20 / 0.90 = \$22.22$  million. The last change was \$50 million as shown in Figure 5. Therefore, the AR(1) model predicts that the series will fall anytime the current value (the last quarter in 2006) is above the mean reverting value. The change in sales for the last quarter in 2006 was \$50 million, which exceeds the mean reverting value.
- 14.6. C The  $t$ -statistic for an autocorrelation equals the autocorrelation estimate divided by its standard error. The standard error for the autocorrelation equals the square root of  $1 / n$ , where  $n$  is the number of observations included in the autoregressive model. Assuming data are available prior to 1992, we can still have 60 observations in the AR(1) model, in which case the standard error equals 0.129. The  $t$ -statistic for the 4th lag autocorrelation equals  $0.25 / 0.129 = 1.937$ , which is not significant at the 0.05 level. Therefore, the 4th lag should not be included in the model if we use a 5% level of significance.

#### QUESTION 15

Source: Study Session 14

- 15.1. B DiggCo's fuel cost hedge is not an economic hedge. Economic hedges or natural hedges are the result of an offsetting relationship between an inflow and an outflow (i.e., when a rise in the price of an input can be offset by raising the price of the firm's output by the same amount). Accounting hedges are undertaken to offset a risk faced by the firm that is not offset naturally through the firm's operations. Cash flow hedges are used to manage instability associated with future cash flows. DiggCo knows it will have continuing expenses for diesel fuel and is therefore attempting to stabilize its cash outflows associated with these expenses.
- 15.2. D DiggCo's debt refinancing hedge is a fair value hedge. Fair value hedges are undertaken to manage the change in fair value of an asset or liability. DiggCo is planning to repurchase its long-term non-callable debt but also expects interest rates to decline between now and the time the repurchase occurs. If rates decline, DiggCo will be forced to pay a higher price to repurchase the debt. The purchased call option on DiggCo's bonds will offset any price increases. The intent of the hedge is to manage the value of DiggCo's liability and is therefore a fair value hedge. DiggCo's mineral rights leasing hedge is a foreign currency hedge. Foreign currency hedges can either be a cash flow or fair value hedge. In this case, DiggCo would like to manage the volatility of U.S. dollar denominated cash outflows rather than the value of an asset or liability. The payments are a fixed amount in Australian dollars but are uncertain in U.S. dollar terms. Thus, the mineral rights leasing hedge is a cash flow hedge.
- 15.3. D DiggCo's copper price hedge is intended to offset potential declines in the market value of its copper inventories that will result if the price of copper falls. Successfully hedging the price of copper would support future revenues and preserve the value of the firm's inventories. Therefore, the copper price hedge is a fair value hedge. DiggCo's reclamation project hedge is a cash flow hedge and is intended to avoid a potential increase in the amount of the U.S. dollar-denominated cash outflow for the reclamation project. Because the dollar may depreciate relative to the South African rand, the cash outflow may increase in dollar terms between now and the time the cash flow is required. DiggCo is attempting to manage the dollar amount of the cash outflow making the reclamation project hedge a cash flow hedge.
- 15.4. A FAS 133 and IAS 39 do not require that all types of hedges disclose where the net gain or loss is reported in earnings. This is a requirement specific to fair value hedges and is not required of cash flow hedges. All types of hedges must have an associated disclosure of the amount of net gain or loss reported in earnings but only fair value hedges must specify where the amount is reported.

- 15.5. C The mineral rights leasing hedge is a foreign currency cash flow hedge. The effective portion of gains or losses on cash flow hedges are recorded in comprehensive income on the balance sheet. The mineral rights leasing hedge has been fully effective so all gains and losses have been and will continue to accumulate in the comprehensive income account. However, this does not mean that the accumulated gains and losses will never show up on the income statement. According to FAS 133 and IAS 39, the accumulated gain or loss is recognized in earnings when the underlying affects earnings. Thus, earnings are affected by accumulated gains or losses each quarter when the mineral rights lease payment is made to the Australian government. The debt refinancing hedge is a fair value hedge which requires that DiggCo use mark-to-market accounting on the derivative and the underlying, recognizing any gains or losses in earnings. If the fair value hedge is fully effective, then changes in the value of the underlying are completely offset by changes in the value of the derivative and the net effect on earnings is zero. Since the debt refinancing hedge is only partially effective, however, the losses on the derivative instrument outweigh gains on the underlying, causing earnings to be lower than they would have been if the hedge were fully effective.
- 15.6. A Under a cash flow hedge, gains and losses on the hedging instrument related to the effective portion of the hedge are accumulated in comprehensive income on the balance sheet and are only recognized in earnings when the underlying item affects earnings. Gains or losses related to the ineffective portion of the hedge are recognized in current earnings. Pitt's statement is incorrect because he claims that the termination of the hedge requires the accumulated gains and losses to be recognized immediately in earnings. Even in the event of hedge termination, the accumulated gains and losses are not recognized until the underlying item (in this case a fuel purchase in nine months) affects earnings.

#### QUESTION 16

Source: Study Session 10

- 16.1. B Warner would receive the yield on the Boyd bonds, 6.48%, less the payment on the swap of  $5.80 + 46 \text{ bp} = 6.26$ . Warner would therefore earn LIBOR plus  $(6.48 - 6.26)$ , or LIBOR plus 22 bp.
- 16.2. C The swap spread methodology is less reliable for analyzing securities below investment grade, since default risk increases—such risk is not adequately captured in the swap spread. The other choices are all reasons for the growing use of swap spreads.
- 16.3. D The spreads over Treasuries should be evaluated relative to their recent history and standard deviation. The Boyd bonds are trading at a spread of  $6.48 - 5.80 = 68 \text{ bp}$ , which is exactly the 2-year average, suggesting no potential price change due to mean reversion. The Collins Corp bonds are trading at a spread of  $6.82 - 5.80 = 102 \text{ bp}$ , versus an average of 65 bp—a difference of 37 bp, almost two full standard deviations above the 2-year mean spread. The Natalie Clothing bonds are trading at a spread of  $7.16 - 5.80 = 136 \text{ bp}$ , versus an average of 110 bp, a difference of 26 bp, just over one standard deviation above the mean spread. Mean reversion analysis would suggest that the Collins bonds would have the most appreciation potential, since they are the cheapest relative to their historical norms. As the spread returns to “normal,” the spread will decline and the bonds should increase in value.
- 16.4. C Mean reversion analysis can be a good tool, but one year is an inadequate time period. The appropriate time frame is somewhat debatable, but ideally an entire business cycle should be represented. A bond investor should focus on total return, and not just trade for a bond with a higher yield. Changes in spreads over the investor's time horizon could dramatically affect the actual results.
- 16.5. C The Natalie Clothing bonds carry the highest speculative rating. If these bonds are upgraded, they would become investment grade, thus increasing potential demand from investors who are required to own investment grade securities. Rising demand would narrow the spread.
- 16.6. A A credit barbell calls for taking credit risk in short/intermediate term securities and offsetting some of that risk with longer-term Treasuries. Warner is considering shorter-term securities, so the long-term Treasuries would be needed to create a credit barbell.