

Gearding Construction Company: Accounting for Derivatives - Interest Rate Swaps: Instructor Guide

Title:

Gearding Construction Company: Accounting for Derivatives - Interest Rate Swaps

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Discipline:

Accounting

Target Audience

Intermediate, accounting majors and finance majors

Keywords

Derivatives, hedge accounting, interest rate swaps, no-hedge accounting

Length of Time/Staging

The problem takes two seventy-five minute classes.



Abstract

Students who have completed the six stages of the Gearding Construction Company PBL unfolding problem will have learned how to account for interest rate swaps under both hedge accounting and no-hedge accounting conditions.

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Format of Delivery

The problem is delivered in a cooperative learning setting with mini-lectures interspersed.

Student Learning Objectives

1. Understand a broad overview of the nature of derivatives for hedging.
2. Understand how interest rate swaps can be used for hedging.
3. Be able to explain the details of an interest rate swap, including constructing an example.
4. Identify the three hedging conditions possible under FASB 133.
5. Understand the cash flows in hedging with interest rate swaps.
6. Record journal entries pertaining to interest rate swaps when a fair value hedge is involved.
7. Record adjusting journal entries for interest payable at year end.
8. Make a year end entry for an interest rate swap when hedge accounting is used and when no-hedge accounting is used.
9. Be able to analyze an interest rate swap/instrument.
10. Be able to incorporate the accounting for embedded options into an interest swap transaction.
11. Record journal entries pertaining to interest rate swaps when no-hedge accounting is required.
12. Record year-end journal entries for an interest rate swap in years subsequent to the first.
13. Resolve the ensuing liability in subsequent year.

Student Resources

Students may use an intermediate financial accounting text as a resource. Students should be referred to chapters dealing with derivative instruments. For example, pp. 861-881 of the eleventh addition of Intermediate Accounting by Keiso, Weygandt, and Warfield (Wiley) covers this topic.

In addition, students will find the attached PBL worksheet helpful as a problem solving aid.



Instructor Resources

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Author's Teaching Notes

1. Pass out Phase 1 of the Gearding Construction Company unfolding problem. The purpose of this phase is to engage students with the topics of hedging and derivatives in general and interest rate swaps in particular. Use Structured Problem Solving and give students time to work in groups to discuss the six questions asked in this phase. While students are in Structured Problem Solving mode, instructors should monitor the groups and clear up uncertainties or misconceptions that arise. After an allotted time period, call for student reports. Go slowly on this portion of the problem. Allow the students to wrestle with the concepts and come up with their own examples. At the conclusion of the class discussion, ensure that the following points have emerged:
 - a. The first question leads the students to explore the nature of hedging and derivatives. This fulfills the first learning objective.
 - i. Hedging refers to the structuring of transactions in order to reduce risk. One reduces the risk of loss on a financial transaction by entering into a compensating transaction on the "other side." For example, suppose a company has purchased some marketable equity securities and is concerned that the price of these securities might decline. The company could hedge the risk of a decline in market price by purchasing a put option. Since the seller of the put would be obligated to purchase the stock from the company at the strike price, the risk of price decline has been assumed by the seller of the put.
 - ii. A derivative is a financial instrument that derives its value from the movement of the price, foreign exchange rate, or interest rate on some other asset or financial instrument. A derivative may be used as the compensating transaction in the hedge. In the example above the put option is the derivative.
 - b. The second and third questions lead the students to explore the nature of interest rate swaps. This fulfills the second learning objective.
 - i. An **interest rate swap** is a contract in which two parties agree to exchange future interest payments on an imaginary loan amount, called the **notional amount**. One set of payments is based on a fixed interest rate. The other is based on a variable interest rate tied to some accepted market rate. This is the underlying of the interest rate swap. The most commonly accepted market rate used is the **LIBOR-London Inter-Bank Offering Rate**.



- ii. Students should recognize that Gearding could be protected from the rising interest rate payments due to the bank if they entered into a contract where they receive variable interest payments.
 - iii. On the other hand, they forgo the advantage they would have had were interest rates to decline.
 - c. The fourth question asks students to construct their own example. Instructors must be patient as students respond to this question. Listen to the student examples and ask them to explain how the hedge in their example works. You may want to solicit several examples depending on the time. At the conclusion of this discussion, students will have fulfilled the third learning objective.
 - d. The fifth question should lead to the two types of hedges. Tie this back to the student examples. This question deepens student understanding of the first three learning objectives.
 - i. Cash flow hedge—a derivative that offsets, at least partially, the variability in cash flows from forecasted transactions that are probable.
 - ii. Fair value hedge—a derivative that offsets, at least partially, the forecasted change in the fair value of an asset or liability that is probable.
 - e. The sixth question explores the kind of hedge that the students did not use as an example. Perhaps another group got this. This question also deepens student understanding of the first three learning objectives. General principles:
 - i. If the underlying instrument is a variable rate one, the derivative would likely be a receive-variable, pay-fixed swap. In this case, we have a cash flow hedge. It ensures the net cash flow remains fixed.
 - ii. If the underlying instrument is a fixed rate one, the derivative would likely be a receive-fixed, pay-variable swap. In this case, we have a fair value hedge. It ensures that the market value of the instrument remains relatively stable. Note: These are not common. The company is not much interested in the fair value of its debt and if it were it would likely negotiate a variable rate loan rather than go through this route.
 - iii. Having worked through the problem to this point, students will understand two types of hedges that are recognized by FASB 133. Later, they will encounter no hedge accounting. This fulfills the fourth learning objective.
2. Pass out Phase 2 to the students. Instructors should use Structured Problem Solving to have students confront this new information. To monitor student progress, instructors may rotate from group to group. At the end of a preannounced time period, the instructor should initiate whole-class discussion by randomly calling upon a student to report.
- a. On the fifth day of each month there is a cash transfer for the difference between the LIBOR rate and the fixed rate. Gearding is protected from rises in variable interest rates because it will receive a cash payment should the LIBOR go up. On the other hand it will pay the bank should the LIBOR fall below the fixed rate.
 - i. Example if LIBOR goes to 6.50%: In theory, Gearding pays 6.25% to the bank and the bank pays 6.50% to Gearding. In practice, the difference is a cash transfer of 0.25% to Gearding. Thus Gearding gets $\$58,000,000 * .0025 * 1/12 = \$12,083$.

- ii. Example if LIBOR goes to 6.15%. In theory, Gearding still pays 6.25% to the bank but the bank pays 6.15% to Gearding. In practice, Gearding pays the bank the difference of 0.10%: $\$58,000,000 * 0.001 * 1/12 = \$4,833$.
- b. The execution of the swap is itself a zero cost transaction. Conduct a **Think-Pair-Share (TPS)**: Ask students to speculate how the financial institution makes money on a zero cost transaction. Have them share this with their suit partner. Finally call for a volunteer to give a whole class response. (It is in the fixed rate).
- c. Phase 2 satisfies the fifth learning objective.
- 3. Phase 3 - Here the students have a series of twelve settlements and ask for the accounting and reporting. When the company receives cash it will credit Other Income. When the company pays cash it will debit Other Expense. It is reported in the Other section of the income statement.
 - a. The spreadsheet below gives the cash flows, the expenses and incomes from the monthly settlements.

***Gearding Construction Company
Interest Rate Swap***

Date	Fixed Rate	30 Day Libor	Notional Amount	Cash Flow	Other Expense	Other Income	Interest Expense
5-Feb-00	6.25%	6.30%	\$58,000,000	\$2,416.67	\$2,416.67		\$302,083.33
5-Mar-00	6.25%	6.25%	\$58,000,000				\$302,083.33
5-Apr-00	6.25%	6.10%	\$58,000,000	(\$7,250.00)	\$7,250.00		\$294,833.33
5-May-00	6.25%	6.00%	\$58,000,000	(\$12,083.33)	\$12,083.33		\$290,000.00
5-Jun-00	6.25%	6.05%	\$58,000,000	(\$9,666.67)	\$9,666.67		\$292,416.67
5-Jul-00	6.25%	6.20%	\$58,000,000	(\$2,416.67)	\$2,416.67		\$299,666.67
5-Aug-00	6.25%	6.35%	\$58,000,000	\$4,833.33		\$4,833.33	\$306,916.67
5-Sep-00	6.25%	6.45%	\$58,000,000	\$9,666.67		\$9,666.67	\$311,750.00
5-Oct-00	6.25%	6.60%	\$58,000,000	\$16,916.67		\$16,916.67	\$319,000.00
5-Nov-00	6.25%	6.40%	\$58,000,000	\$7,250.00		\$7,250.00	\$309,333.33
5-Dec-00	6.25%	6.20%	\$58,000,000	(\$2,416.67)	\$2,416.67		\$299,666.67
Totals for Year					<u>\$7,250.00</u> >	<u>\$33,833.33</u>	<u>\$41,083.33</u>
							<u>\$3,330,166.67</u>

- b. **Conduct a Think-Pair-Share (TPS)**. Ask the students to write the journal entries for the swap for February and for April in their notes. Then have them share their solution with partner. Finally, call for a whole class response.
 - i. February is an example of a positive cash flow on the swap.



Dr. Cash \$2,416.67
 Cr. Other Income \$2,416.67

To record receipt of cash in settlement of interest rate swap

ii. April is an example of a negative cash flow on the swap.

Dr. Other Expense \$7,250.00
 Cr. Cash \$7,250.00

To record payment of cash to settle interest rate swap

- c. The company will net the Other Income/Expense. The amount shown on the income statement will be the net of the two columns on the spreadsheet above. $\$41,083.33 - \$33,833.33 = \$7,250.00$ credit balance (Other Income)
- d. Each month the company will debit interest expense and credit cash for the amount shown in the final column of the spreadsheet above. For example on February 5:

Dr. Interest Expense \$304,500.00
 Cr. Cash \$304,500.00

To record the February interest payment

- e. **Conduct a TPS:** Ask the students to individually think how hedging is accomplished in this instance. Have them share their idea with a partner. Finally, call for a volunteer to give a whole class response. The solution is given below:

	February	April	
Interest paid on the note	\$304,500.00	\$294,833.33	
Cash (received) paid from swap	(\$ 2,416.67)	\$7,250.00	
Net cash outflow	\$302,083.33	\$302,083.33	

Note net cash outflow is exactly the same as the interest at the fixed rate of 6.25% ($\$58,000,000 * 6.25% * 1/12$) in both months. Therefore we have a perfect hedge.

- f. Adjusting entries:
 - i. For the debt: The note accrues interest as of the last interest reset date (December 5).

Interest expense \$256,153
 Interest payable \$256,153

To record 26 days accrued interest
 ($\$58,000,000 * 6.20% * 26/365$)



- ii. There is no adjusting entry for the interest portion of the swap. This amount will be embedded in the fair value of the swap, for which the company will make an entry.

4. Phase 4

- a. Gearding has stated that it wishes to use hedge accounting. We have no information thus far to indicate that they cannot. Therefore, they must credit a liability and take the expense directly to comprehensive income bypassing the income statement.

Other comprehensive income (expense)	\$2,777,942.00
Interest rate swap liability	\$2,777,942.00

to record the interest rate swap at its fair value under hedge accounting.

- b. In order for Gearding to use hedge accounting, there must be a perfect match between the variable rate note and the variable portion of the interest rate swap. Tenor is the term used for maturity dates. The tenor must also match.
- c. Show the journal entry for no-hedge accounting.

Loss on interest rate swap	\$2,777,942.00
Interest rate swap liability	\$2,777,942.00

to record the interest rate swap at its fair value under no-hedge accounting.

- d. Companies like hedge accounting because the nominal effects are in Other Comprehensive Income, bypassing the income statement. A construction company would prefer not to have the fluctuations of hedge affecting the bottom line.
- e. No-hedge accounting is elective. A company must meet strict standards to qualify for hedge accounting.
- f. Stress the fact that a balance sheet approach is used.

5. Phase 5

- a. The early termination agreement has no effect on the hedge accounting. The key is the fact that the early termination results in a settlement payment so neither party is harmed.
- b. The knockout provision, on the other hand, kills hedge accounting. Essentially the knockout provision is an embedded option for the bank. This is because Gearding must still pay the variable rate on the note itself. So it loses the hedge and we no longer have a perfect hedge.
- c. The company agrees to the knockout feature because the bank would require a much higher interest rate on the fixed rate portion of the swap without it.
- d. Mention that because of the discovery of the knockout provision the entry for no hedge accounting (above) must be made.

6. Phase 6

- a. The cash flow for January 5:



Receive variable portion (6.30% * \$58,000,000 /12)	\$304,500
Pay Fixed Portion (6.25% * \$58,000,000 /12)	<u>\$302,083</u>
Cash in-flow	\$2,417
Payment of interest on note (6.30% * \$58,000,000 /12)	<u>\$304,500</u>
Net cash outflow	\$302,083

b. January Journal Entries:

Interest Expense	\$48,347
Interest Payable	\$256,153
Cash	\$304,500

To record cash payment on note in January

Cash	\$2,417
Other income	\$2,417

To record receipt of cash from interest rate swap

c. The cash flow for October 5:

Receive variable portion (7.60% * \$58,000,000 /12)	\$367,333
Pay Fixed Portion (6.25% * \$58,000,000 /12)	<u>\$302,083</u>
Cash in-flow	\$65,250
Payment of interest on note (7.60% * \$58,000,000 /12)	<u>\$367,333</u>
Net cash outflow	\$302,083

d. Cash flow for November 5. Because the knockout provision has kicked in, the only cash flow is from the payment of interest on the note.

Payment of interest on the note (7.80% * \$58,000,000 /12)	\$377,000
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Note what the knockout provision cost Gearding

(7.80% - 6.25%) * \$58,000,000 /12	\$74,917
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This may also be calculated:

Variable interest paid	\$377,000
Fixed portion on Swap	<u>\$302,083</u>



Cost of Knockout provision \$74,917

e. Year-end journal entry.

Book value of swap	\$2,777,942
Fair value of swap	<u>\$2,596,265</u>
Debit to swap (balance sheet approach)	\$181,677

Interest rate swap liability \$181,677

 Gain on interest rate swap \$181,677

To record year-end fair value of interest rate swap

7. Review points:

- a. Once a financial instrument is identified as a derivative, fair value accounting must be used.
- b. No hedge accounting is elective. A company may always choose this option.
- c. If a company wishes to use hedge accounting it must meet strict criteria.

Assessment Strategies

The PBL Worksheet that is included contains a block at the bottom of the second page that asks students what they have learned. Throughout the process, the instructor may use student responses on the worksheet to assess learning (formative assessment). Having worked through this problem, students should be able to successfully take traditional accounting tests containing problems and questions about the equity method of accounting. Instructors may wish to write more challenging questions to deal with the joint venture aspects of the problem (summative assessment).