

## Fair value hedging, between opportunity and necessity

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**Abstract.** *In the actual worldwide context the exposure of companies to various financial risks increased and the consequences are much worst than 10 years ago. That's why hedging accounting has become a necessity. Derivative operations can be used to hedge: interest rate risks, foreign currency exchange rate risks, credit risks. Derivatives used to hedge these risks can be handled to cover fair value exposure, cash flow exposure and exposure to changes in the value of a net investment in a foreign operation.*

*This paper proposes two models for fair value risk hedging using derivatives. Both examples are based on IAS 39, some of the most controversial accounting standards of the day. The proposed solutions can be used by the experts interested in applying hedging accounting in order to manage this particular type of risk and to limit the negative consequences of companies' performances.*

**Keywords:** hedge accounting; hedge effectiveness; fair value exposure; cash flow exposure; fair value hedge.

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**REL Classification:** 11C.

## 1. Introduction

As the use of derivatives increased on a global scale, the appearance of new accounting standards was necessary. This is why IAS 32 and 39 were issued: to provide a comprehensive list of all disclosures and presentation issues that are relate to financial instruments. Although they were issued as separate standards, they are applied in practice as a unit because they deal with the same accounting phenomenon.

## 2. Requirements for hedge accounting

The introduction of fair value as an evaluation method for financial assets has increased since the introduction of IAS 39 and thus, has generated a series of problems. The ones directly facing these problems are the companies that chose to use derivatives, weather for hedging or speculative purposes. When it comes to recording derivatives in financial reports, the most important issue is the treatment of the gains or losses resulting from the adjustment of the derivative's carrying value to fair value.

The main reason for hedging accounting is to protect the profit against losses generated by fluctuations of: prices, currency exchange rates and interest rates. Gains and losses on the derivative used for hedging should be in the opposite direction from and of similar magnitude to the gain or loss on the hedged item.

When using hedge accounting, three conditions must be met simultaneously:

- the nature of the hedge risk;
- the hedge effectiveness;
- the documentation.

The derivatives appearance was generated by the discovery of new ways to limit and manage current activity risks. Of course, derivatives couldn't hedge any type of risk. Derivative operations can be used to hedge the following risks: interest rate risks, foreign currency exchange rate risks, credit risks.

Derivatives used to hedge these risks can be handled to cover three types of risk exposures:

*Fair value exposure:* A fair value risk exists if fair value can change either for a recognized asset or liability, or for an unrecognized firm commitment. To qualify for hedge accounting, the fair value risk must have the potential to affect reported earnings if it is not hedged.

*Cash flow exposure:* A cash flow risk exists if amounts of future cash flows that could affect earnings can change. The future cash flow at risk can be a contractual

cash flow related to an existing asset or liability, or it can be a forecasted cash flow from a transaction that is expected to occur but is not yet subject to a contract.

*Exposure to changes in the value of a net investment in a foreign operation:* This type of risk relates to changes in the value of an investment in a foreign subsidiary or in a foreign company accounted for by the equity method. Such changes in value can occur when exchange rates increase or decrease.

In any case it is very important to calculate the value of the exposure and the potential to affect reported earnings. If the changes of the assets and liabilities value are recognized immediately in earnings, they do not qualify for hedge accounting. Matching the recognition of gains and losses occurs without any need for special accounting. For hedge accounting to be used, a company must expect that the hedge will be highly effective in offsetting changes in the value of the hedged item or changes in cash flows related to the hedged item.

In order to apply hedge accounting, you have to take into consideration the following:

*Step 1* – choosing the derivative instrument has to generate gains and losses that offset losses and gains on the hedged item.

*Step 2* – selecting a method to measure the portion of the change in value of the derivatives and evaluate hedge effectiveness (at the beginning, and while the hedge is active).

Measuring offsetting changes in the derivative's value effectiveness tests can be based on changes in the value of the entire hedged instrument or can exclude changes in the value related to passage of time. For example, futures and forward prices can be viewed as the total of the current spot price plus a forward discount or premium. The change in forward discount or premium is unrelated to any changes in an item where futures are used to hedge, so a valid approach is to exclude the changes in discount or premium from the measurement of hedge effectiveness. In this case, hedge effectiveness would be evaluated by comparing changes in the spot rate component of futures prices to changes in the value of the hedged item. Similarly, the entire premium on an out-of-the-money call option represents the time value related to the possible gains should the option end up in the money. As the time to expiration draws closer, this time value gradually decreases. The changes in the time value component of the option is unrelated to any changes in an item that the option is used to hedge, so a valid approach is to exclude the changes in time value from the measurement of hedge effectiveness.

Hedge effectiveness would be evaluated by comparing changes in the intrinsic value of the option to changes in the value of the hedged item.

### 3. Hedge accounting for fair value hedges

IAS 39 defines the fair value hedge as a hedge of “the exposure to changes in fair value of a recognized asset or liability”. If a fair value hedge is effective, it creates a risk exposure in the opposite direction from the risk exposure of the hedged item.

Hedge accounting applies to recognized assets and liabilities, but also for unrecognized firm commitments. An unrecognized firm commitment is a contractual obligation that is not yet reflected on the balance sheet, but in the future it will become an asset or a liability once it will appear in the balance sheet. The firm commitment must be for a fixed quantity, price, and date and has to be binding both parties (customer and supplier). In order to use hedge accounting to cover fair value risk, the hedge item must be a single asset, liability, or commitment or a group of assets, liabilities, or commitments whose values change together.

All changes that occur in the process of hedging will be reported in current earnings, the carrying value of the derivative is adjusted to fair value on the balance sheet, and the change in that carrying value from period to period is included on the income statement. At the same time, the balance sheet carrying value of the hedged item is also adjusted so that unrealized gains and losses due to the hedged risk offset the gains and losses on the derivative.

#### 3.1. Example for fair value hedge of exposed asset

In October N a refinery who's processing crude oil from import has an inventory of 80,000 barrels (12,720,000 l) at 72 \$/barrel, 1\$ =3 lei. The company anticipates that the crude oil will be used in producing products that will ultimately be sold in June N+1.

Because on the market crude oil's price registered an increase the company decides buying futures contracts (short position) on the American market (CME - Chicago Mercantile Exchange) in order to hedge the value of its crude oil. The company buys 10 June futures contracts at a price of 85.09 \$ per barrel. CME requires a margin deposit for 800 \$ per contract (each contract refers 1000 barrels)

#### Hedging designation

The refinery designates the futures contracts as a fair value hedge of the change in the value of the crude oil inventory due to changes in spot prices. It is a fair value hedge because the company is hedging the value of an existing asset. It might seem strange that the company is hedging the value of the inventory it already owns since the company has already spent the money to purchase that inventory, and the amount cannot increase. The company has a continuing need for oil in its

production, however, and future purchases of oil would be at higher prices if the price of crude oil rises. Although the company designates the existing inventory as the hedged item, it is really hedging the cost of replacing that inventory once it has been used up.

### Expected hedge effectiveness

If the value of crude oil drops, the company's inventory of it decreases in value, but it expects to make an offsetting profit on the short position in crude oil futures. It might seem that this hedge would be highly effective based on the critical terms of the derivative.

Subsequent price behavior the spot prices and futures prices subsequently change as follows:

Months	CME	Spot cruel oil per barrel (\$)	Futures cruel oil per barrel (\$)
Nov	15	80.00	79.65
Dec	31	84.15	83.75
Jun	15	85.49	85.09

### Accounting treatment

Since all of the conditions for hedge accounting were met, the refinery accounts for the futures contracts as a hedge of the fair value of its cruel oil inventory. The carrying value of the inventory is adjusted by the amount of effective hedging, and changes in the futures position not attributable to effective hedging are recognized in earnings. Because CME (like all futures exchanges) requires daily settlement of futures positions, the changes in value are realized through cash payments to or from the exchange, and the open futures position always has a fair value of zero. Required journal entries at each date are as follows:

\* November 15 – to record the margin deposit 800\$/contract (800 \$ x 10 contracts x 3 lei/\$)

Commodities accounts	=	Bank account	24,000 lei
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\* December 31 – payment to CME in order to cover losses:

1,000 barrels x (79.65 – 83.75) x 3 lei/\$ per contract

Commodities accounts	=	Bank account	123,000 lei
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– to record losses on futures positions

Profit & Loss account	=	Commodities accounts	123,000 lei
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– to adjust the carrying amount of cruel oil for changes on spot price:

80,000 barrels x (84.15 – 80.00) x 3 lei/\$ per contract.

Cruel oil inventory	=	Profit & Loss account	996,000 lei
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\* June 15 – payment to CME in order to cover losses:  
1,000 barrels x (85.09 – 83.75) x 3 lei/\$ per contract

Commodities accounts	=	Bank account	40,200 lei
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– to record losses on futures positions

Profit & Loss account	=	Commodities accounts	40,200 lei
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– to adjust the carrying amount of cruel oil for changes on spot price:  
80,000 barrels x (85.49 – 84.15) x 3 lei/\$ per contract

Cruel oil inventory	=	Profit & Loss account	321,600 lei
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– to record the return of the margin deposit

Bank account	=	Commodities accounts	24,000 lei
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### 3.2. Fair value hedge of a firm commitment

On October 1, N, the refinery enters into a fixed-price contract to sell 10,000 barrels of gasoline at \$125 per barrel in December N. This is a firm commitment that exposes the company to risk because the cost of the cruel oil used to make the wire could increase, reducing the company's profit on the contract. The company decides to hedge this risk by taking a long position in cruel oil futures. The company buys 10 December CME futures contracts at a price of \$90.42 per barrel. The refinery has to pay a margin deposit of \$400 per contract.

#### Hedging designation

The refinery will use the futures contracts as a fair value hedge of the firm commitment to sell its finish product: gasoline.

If the company intends to purchase additional cruel oil to make the wire, the futures could instead be designated as a cash flow hedge.

Based on an analysis of gasoline and cruel oil futures prices, the company concludes that cruel oil futures should provide a highly effective hedge of cruel oil sales prices.

Subsequent price behavior the spot prices and futures prices subsequently change as the following table indicates:

Months	CME	Spot cruel oil per barrel (\$)	Futures per barrel (\$)	Gas spot per barrel (\$)
Oct	1	86.27	86.61	125
Nov	30	88.71	89.07	127
Dec	31	90.42	90.42	129

**Accounting treatment**

Since all of the conditions for hedge accounting were met, the refinery records in its accounting the futures contracts as a hedge of the fair value for this firm commitment to sell gasoline. The commitment is recorded on the balance sheet at the amount of the effective hedging, and changes in the futures position not attributable to effective hedging are recognized in earnings.

The daily settlement of futures positions is realized through cash payments to or from the CME, and the open futures position always has a fair value of zero. When the hedged transaction finally occurs, the balance in the commitment account adjusts the recorded amount of the hedged transaction. See the following:

\* October 1– to record the margin deposit 400\$/contract (400 \$ x 10 contracts x 3 lei/\$)

Commodities accounts	=	Bank account	12,000 lei
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\* November 30 - to record gains on futures positions  
1,000 barrels x (89.07 – 89.61) x 3 lei/\$ per contract

Commodities accounts	=	Profit & Loss account	73,800 lei
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- to record firm commitment to sell 10,000 barrels x (129 – 125) x 3 lei/\$:

Profit & Loss account	=	Firm commitment	60,000 lei
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\* December 31- to record gains on futures positions 1,000 barrels x (90.42 – 89.07) x 3 lei/\$ per contract

Commodities Accounts	=	Profit & Loss Account	40,500 lei
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- to record firm commitment to sell:  
10,000 barrels x (129 – 127) x 3 lei/\$

Profit & Loss account	=	Firm commitment	60,000 lei
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- to record withdrawal of gains and the margin deposit  
73,800 + 40,500 + 12,000 = 136,300 lei

Bank account	=	Commodities accounts	136,300 lei
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- to record sale of 10,000 barrels of gasoline at \$125 per barrel

Accounts receivable	=	Sales revenues	1,250,000 lei
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- to reverse firm commitment balance and adjust recorded revenues

Firm commitment	=	Sales revenues	120,000 lei
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#### 4. Conclusions

Hedge accounting applies to recognized assets and liabilities, but also for unrecognized firm commitments

In absence of hedging the firm sales commitment would not be recorded on the balance sheet.

All derivatives are to be shown at fair value on the balance sheet as either assets or liabilities, depending on the specifics of the contract

The accounting for change in fair value of a derivative depends on whether the derivative has been designated as part of an effective hedging relationship.

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