HEDGING VIA FORWARD CONTRACTS

Example 1. *Hedging a Long Forward Contract.* Acme Metals buys 10 Comex gold contracts at 100 ounces each for June delivery at 11.a.m Monday at a futures prices of $F_{\tau|t} = \$400$ per ounce. They do this via the futures market and they are obliged to deposit the corresponding margin money with a the Futures Commission Merchant (FCM) who acts on their behalf. At the close of trading on Monday, the futures price settles to $F_{\tau|t_1} = \$395$ per ounce. On Tuesday morning, Acme metals was therefore obliged to pay to the FCM the variation margin which amounts to

$$\$(400 - 395) \times 100 \times 10 = \$5,000.$$

Tuesday's settlement price is $F_{\tau|t_2} = \$397$, Therefore, on Wednesday morning, Acme metals collects

$$\$(397 - 395) \times 100 \times 10 = \$2,000.$$

On Wednesday at 2pm, Acme offsets its position by selling 10 contracts at the futures price of $F_{\tau|t_3} = \$401$. This generates a payment of

$$\$(401 - 397) \times 100 \times 10 = \$4,000.$$

The total accumulated profit, before the deduction of commission charges, is therefore $\$1,000$. The outcome may be denoted by

$$\{(F_{\tau|t_1} - F_{\tau|t}) + (F_{\tau|t_2} - F_{\tau|t_1}) + (F_{\tau|t_3} - F_{\tau|t_2})\} \times q = (F_{\tau|t_3} - F_{\tau|t}) \times q$$

Example 2. *Hedging a Short Forward Contract.* Imagine now that Acme's position is reversed. It takes a short position to deliver on 10 gold contracts each for 100 ounces, for which it should to be paid $F_{\tau|t} = \$400$ per ounce for a June delivery. By closing time on Monday, the price has declined to \$395. This results, on Tuesday morning, in a payment of

$$\$(400 - 395) \times 100 \times 10 = \$5,000.$$

into its margin account, since the contract enables Acme to sell the gold for more than it is currently worth. By closing time on Tuesday, the price has risen to \$397, which wipes out some of the previous gains. In consequence, there is a reduction of

$$\$(397 - 395) \times 100 \times 10 = \$5,000.$$

in Acme's Margin account. One Wednesday, the price rises again to \$401 causing a further reduction of

$$\$(401 - 397) \times 100 \times 10 = \$4,000.$$

in the margin account. If Acme were to close its position now by purchasing 10 contracts at a futures price of \$401, then, overall, it will have lost $\$1,000$ over the three days.