

Section II

Basic Pricing Tools

Chapter 14: Margins

Learning objectives

- Learn about margins and the difference between initial and maintenance margins

Key terms

Futures Commission Merchant (FCM): Individuals or companies that solicit or accept orders for the purchase or sale of any commodity for future delivery. More commonly known as a broker.

Margin: The security deposit or performance bond needed to participate in the market.

Initial margin: The amount of margin required by the broker when a futures position is opened (and the amount needed to be in the account after margin deposits).

Maintenance margin: The minimum amount of equity that must be maintained in the account. The maintenance margin serves as an alarm point for requiring additional margin deposits.

Mark-to-market: Typically done daily, mark-to-market (or marked-to-market) is how the clearinghouse puts a value on all open positions. The clearinghouse makes payouts and collects funds on all positions “marked-to-market,” based on closing prices.

Capital: In reference to margins, capital is money used for initial margin plus deposits or withdrawals from the brokerage account.

Equity: In reference to margins, equity is capital plus cumulative position gains or losses.

Margin call: A request from a brokerage firm to a customer to bring margin deposits up to initial levels.

Leverage: The ability to control large dollar amounts of a commodity with a comparatively small amount of capital.

Everyone who trades futures contracts, or sells options contracts, must post margin. Sometimes called performance bonds, margins are not a down payment, but a guarantee of performance. Margin levels are established by the exchanges, and typically amount to 5-15% of the contract value. Margin

requirements can be changed on short notice. For example, as of July 2013, with Dec'13 corn futures at \$5/bu. and a total contract value of \$25,000 (\$5/bu. * 5,000 bushels), margins are \$2,700/contract.

Margin consists of two parts. Initial margin is the amount of margin required when a futures position is opened. Maintenance margin is the minimum amount of equity that must be maintained in the account, after the initial margin is met. Maintenance margins are roughly 50-75% of the initial margin and they serve as an alarm point for requiring additional margin deposits.

Margin requirements vary among speculators and hedgers. For commercial hedgers, no distinction is made between initial and maintenance margin. Daily fund transfers between hedgers and the clearinghouse cover losses or collect gains on "mark-to-market" positions. Many large speculators also transfer funds daily. Retail customers post margins with their Futures Commission Merchant (i.e. FCM or broker). FCMs can charge their customers a higher margin than required by the exchange, and are responsible for posting margins on the net position of their customers. Traders with positions in related markets (aka spreaders) often enjoy a break in margin requirements. Spread credit of 40-90% can apply, depending on the type of spread.

To illustrate how margins work, let's walk through the establishment of a new futures position, the posting of margin, and how margin requirements change over the course of several days. The situation is straightforward. An elevator buys corn from a farmer, and hedges the purchase with the sale of futures contracts (let's assume the elevator does not automatically transfer funds daily). In this example, initial margin is \$2,700 per corn contract. Maintenance margin is \$2,000 per contract.

Day 1: An elevator buys 10,000 bushels of corn from a local farmer. The purchase is hedged with the sale of two contracts of December corn futures at \$6.00 per bushel. The manager posts initial margin of \$5,400 (\$2,700/contract * 2 contracts) with a futures commission merchant. The maintenance margin level will be \$4,000 (\$2,000/contract * 2 contracts). If the elevator's equity, currently \$5,400, falls below \$4,000, a margin call will be made, requesting more funds for the account (enough to bring the balance up to initial margin).

The market closes at \$6.00 per bushel – the same price at which the contracts were sold. There is no gain or loss to recognize when the position is marked-to-market.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400

(1) Capital includes initial margin plus deposits or withdrawals from the brokerage account.

(2) Equity is capital plus cumulative position gains or losses.

At this point, the elevator has invested \$5,400 in capital. Capital includes initial margin plus deposits or withdrawals from the brokerage account. Keep an eye on the elevator's equity, which is also \$5,400. Total equity in the account is simply the capital invested plus position gains or losses. If equity falls below the maintenance margin level of \$4,000 ($\$2,000/\text{contract} * 2 \text{ contracts}$), then the elevator will face a margin call.

Day 2: Corn prices decline 10 cents per bushel, leading to a gain of \$1,000 in the elevator's brokerage account ($\$.10/\text{bushel} * 10,000 \text{ bushels}$). Equity in the elevator's brokerage account is up to \$6,400. Total equity in the account is simply the capital invested (\$5,400 initial margin) plus the cumulative position gain (\$1,000).

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400

Day 3: Corn prices rise by 3 cents per bushel. The futures account will show a loss of \$300 ($\$.03/\text{bushel} * 10,000 \text{ bushels}$). The cumulative position gain is still positive by \$700. Equity in the brokerage account is down to \$6,100.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400
Day 3		\$5.93	(\$300)	\$700		\$6,100

Day 4: A surprising crop report sends the price of December corn up the limit, or 40 cents per bushel. The loss on the hedge position is \$4,000 in one day ($\$.40/\text{bushel} * 10,000 \text{ bushels}$). Equity in the account falls to \$2,100, and the elevator can expect a margin call. A margin call occurs when equity in the account falls below the maintenance margin level (in this case \$4,000). The trader must deposit funds to bring the equity position back to the initial margin level. Note that the trader deposits \$3,300 so that the equity equals the initial margin of \$5,400 ($\$2,100 \text{ equity} + \$3,300 \text{ deposit} = \$5,400$). If a trader fails to make the deposit, the broker has the right to close out the position.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400
Day 3		\$5.93	(\$300)	\$700		\$6,100
Day 4	Dec corn is limit up! Margin call of \$3,300 – the elevator must deposit this with the FCM	\$6.33	(\$4,000)	(\$3,300)	\$8,700	\$2,100 \$5,400

Day 5: The market is having second thoughts about the crop report. Corn prices fall 18 cents per bushel, leading to a \$1,800 gain in the elevator's brokerage account. Equity is up to \$7,200.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400
Day 3		\$5.93	(\$300)	\$700		\$6,100
Day 4	December corn is limit up! Margin call of \$3,300	\$6.33	(\$4,000)	(\$3,300)	\$8,700	\$2,100 \$5,400
Day 5		\$6.15	\$1,800	(\$1,500)	\$8,700	\$7,200

Day 6: Corn prices fall another 11 cents per bushel. Equity is up to \$8,300.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400
Day 3		\$5.93	(\$300)	\$700		\$6,100
Day 4	December corn is limit up! Margin call of \$3,300	\$6.33	(\$4,000)	(\$3,300)	\$8,700	\$2,100 \$5,400
Day 5		\$6.15	\$1,800	(\$1,500)	\$8,700	\$7,200
Day 6		\$6.04	\$1,100	(\$400)		\$8,300

Day 7: Corn prices fall 7 cents per bushel. Equity is up to \$9,000. The market has settled down and elevator decides to withdraw \$3,000 from the account. The \$6,000 of equity remaining in the account is comfortably above the \$4,000 maintenance level.

	Trades, Margin Deposits and Withdrawals	Settle Price	Daily Gain (Loss)	Cumulative Position Gain (Loss)	Capital (1)	Equity (2)
Day 1	Sell 2 contracts (10,000 bushels) of Dec. corn at \$6.00	\$6.00	0	0	\$5,400	\$5,400
Day 2		\$5.90	\$1,000	\$1,000		\$6,400
Day 3		\$5.93	(\$300)	\$700		\$6,100
Day 4	December corn is limit up! Margin call of \$3,300	\$6.33	(\$4,000)	(\$3,300)	\$8,700	\$2,100 \$5,400
Day 5		\$6.15	\$1,800	(\$1,500)	\$8,700	\$7,200
Day 6		\$6.04	\$1,100	(\$400)		\$8,300
Day 7	Withdrawal of \$3,000	\$5.97	\$700	\$300	\$5,700	\$9,000 \$6,000

Leverage

Margins allow for leverage - the ability to control large dollar amounts of a commodity with a comparatively small amount of capital. Leverage is very high in commodities trading because margins are low relative to the value of the contract. Consider, for example, how a cattle feeder locks in corn costs with a modest amount of margin. A cattle feeder can “buy” \$150,000 worth of corn with the purchase of 6 futures contracts ($\$5/\text{bushel} * 5,000 \text{ bushels}/\text{contract} * 6 \text{ contracts}$). His cost is the initial margin of \$16,200 ($\$2,700/\text{contract} * 6 \text{ contracts}$). This is a little more than 10% of the actual value of the corn. If the price of corn rises 1%, or 5 cents per bushel, equity in the cattle feeders account will rise by 9% ($\$1,500 \text{ total gain}/\$16,200 \text{ total equity}$).

Leverage in futures trading is attractive to speculators. Leverage, however, is a sword with two edges. Equity can both rise and fall very quickly.

Further reading

Quick Facts on Margins at CME Clearing, July 2011 <http://www.cmegroup.com/clearing/files/cme-clearing-margins-quick-facts-2011.pdf>

Exercise #14

Assume that the initial margin for trading wheat futures is \$2,500 per contract, and the maintenance margin is \$2,000. You sell two contracts of May wheat futures today and deposit \$5,000 with your broker.

The next day the price of May wheat falls 3 cents per bushel. Will you have a margin call and, if so, how much margin money must you send to your broker?

The following day, the price of May wheat rises 25 cents per bushel. Will you have a margin call and, if so, how much margin money must you send to your broker?