

than the spot price plus the cost of carry, arbitrage opportunities arise by getting into a short position and by immediately buying the underlying on the spot market. If the futures price is smaller than the spot price, selling the underlying and getting a long position in the futures market would also deliver an arbitrage opportunity.

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## *Futures Commission Merchant*

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A futures commission merchant (FCM) is a legal entity or an individual that offers futures market brokerage services. An FCM has to be a member of the National Futures Association (NFA), which is responsible for registration and general supervision, and it must be registered with the Commodity Futures Trading Commission (CFTC) to whose regulation it is subject. Furthermore, FCMs are subject to the regulation of the respective commodity exchanges. To enter into a futures contract, each party that is not an exchange member itself must utilize directly or indirectly an FCM's brokerage service. Exchange members who are not

clearing members themselves are required to trade through an FCM that is a clearing member. For its services the FCM charges its customers brokerage and other fees.

The FCM assumes the counterparty risk for both long and short futures contract positions. To mitigate this risk, to guarantee market integrity, and to protect other market participants the customers, except for exchange members, typically have to deposit a margin with the FCM. Minimum and additional margin requirements are set by the exchange and by the FCM, respectively. The margin account is opened with an initial margin payment and is used to ensure daily (or more frequent) settlement of the gains and losses of the contract position. The FCM may make margin calls to rebalance the account and typically benefits from the interest-free use of the margin deposits. To mitigate the risk of its own default the FCM must deposit a margin with the clearing organization.

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## *Futures Contract*

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Futures contracts, like options and swap, are an example of a financial instrument known as derivatives. In other words,

futures contracts derive their value from an underlying asset such as stocks, currencies, an index such as the S&P500, Treasury-bill rate, etc. These contracts are standard contracts in terms of maturity date and also contract sizes. In a way, futures contracts replace forward contracts in organized markets—that is, they do not rely on chance matching—with standardized contracts. The major traders in the futures markets are hedgers and speculators. While hedgers try to eliminate or lower the risk they may face from price changes in the future, speculators' aims to profit from price changes based on their expectations.

Trading for a futures contract takes place on an organized futures market (e.g., Chicago Mercantile Exchange [CME]), to buy or sell an underlying asset/instrument at a specified delivery or maturity date for an agreed-upon price which will be paid at the delivery date. The agreed-upon price is called the future price. The trader taking the long position in the futures market promises to buy the asset/instrument at the delivery date, whereas the trader taking the short position promises to sell/deliver the asset/instrument at the delivery date.

In a futures contract, each trader has to establish a margin account. Usually, the amount required for margin or performance bond ranges from 5 to 15% of the contract value. Under marking to market, profits and losses go to traders' margin account at the end of the day. For example, assume you have a long position for euro that will mature in 76 days. One lot of euro contract will have 125,000 euros traded in CME, with an initial margin at \$2025. Let us assume the future price is \$0.7450 per euro. At the maturity date, if the price of euro is \$0.7825—hence USD appreciates—the long

position trader will earn a profit of \$0.0375 per contract. In other words, total gain will be  $\$0.0375 \times 125,000 = \$4,687.50$ . On the other hand, short position trader will lose exactly the same amount—long position trader's gain will be equivalent to short position trader's loss. Especially for financial futures, marking to market will minimize the credit/default risk for traders. For example, if the price of euro decreases to \$0.7425 at the end of the day, there will be a loss of \$312.50 for the long position trader. This amount will be taken from the margin account. As a result, the contract will be renewed with the new price, \$0.7425, at the end of the day. If there is a profit next day, the gain will be deposited to the margin account. In addition, if the amount in the margin account falls below the maintenance margin, say \$1500, there will be a margin call to the trader. The trader needs to deposit additional funds to the margin account. Hence, default risk will be minimized as a trader with a high risk, and an unprofitable position will be forced into default at an early stage because of small losses rather than huge losses built after a long time. Thus, marking-to-market is another difference between a forward contract and futures contract. With forward contract, a trader has to wait until the maturity date to realize any loss or gain, which leads the default risk to be higher.

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