

# Hedge *your* Portfolio

USING STOCK INDEX FUTURES

*an investor's guide*

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Chicago Mercantile Exchange

ENGINEERING MARKET FAITH™



During the 1980's and 1990's, the U.S stock market enjoyed one of the greatest run-ups in history. As measured by the benchmark S&P 500® Index, the annualized compounded return on the market was around 16%. Investors small and large became more market literate as the number of mutual funds grew to exceed 9,000 and the number of 401(k) accounts in the U.S. neared 30 million. In fact, for many, the 401(k) account now represents one of their largest assets, if not the largest. Trillions of dollars also now reside in taxable mutual funds and with private money managers.

But as we all know, stock values don't only move upward. Stocks slid nearly 20% in just a few months in 1998's third quarter, causing jitters among investors in the U.S. markets. More recently, investors experienced sizeable declines during 2000 and 2001. At present, investors are wondering how bad it might get and if there is a way to protect their portfolios from significant losses.

In fact, there are ways to protect a portfolio of stocks using a variety of strategies. This brochure will focus on one in particular—using stock index futures to hedge equity portfolios. It also will illustrate how investors can use stock index futures to gain market exposure—the so-called “anticipatory hedge.” This brochure assumes a modicum of knowledge of investments and a very basic knowledge of futures. Before we outline the strategies, there are a few items to consider:

- Size of portfolio
- Construction of portfolio
- Correlation of the portfolio to CME's stock index futures
- Futures accounts/Performance bond requirements
- Tax considerations

## Size of Portfolio

CME's flagship S&P 500 contract had a notional value (or contract size) of around \$287,000 as of January 2002. The E-mini S&P 500, which trades very closely to its larger counterpart, has a value about one-fifth the size, or \$58,000. Hence investors with IRAs/401(k) accounts or portfolios less than \$58,000 in size would not be able to use these products effectively. For example, suppose an investor has \$25,000 in an index fund that replicates the S&P 500 composite. If the investor wanted to hedge using CME's E-mini S&P 500, he would be hedging a \$25,000 portfolio with an instrument with a value of \$58,000 — he would be “over-hedged” by \$33,000 (you could say his hedge would be out of balance).

## Construction of the Portfolio

To use CME stock index products, the investor's portfolio must have a significant component of U.S. equities. Many investors, especially those more conservative, have sizeable stakes in bonds, money market funds, convertible securities, and so on. CME stock index futures are not designed to hedge fixed income instruments, but to hedge equity portfolios that correlate highly with a particular index such as the S&P 500, S&P MidCap 400, Nasdaq-100® and the Russell 2000®.

## Correlation of Equity Portfolios to CME Stock Index Products

Assume that an investor has a large enough portfolio and that it is composed mainly of U.S. equities. The next thing to determine would be how closely the portfolio tracks the underlying indexes on which CME stock index futures are based. For example, the S&P 500 comprises mostly larger capitalization stocks such as General Electric, Cisco, Microsoft and Exxon (and 496 other issues). If you owned shares in an S&P 500 index fund or even a fund/portfolio that had a lot of large

capitalization stocks, the correlation of the fund should be high and the S&P 500 futures contract might be a good vehicle to hedge against a declining market. (See mutual fund statistical summary on page 5).

On the other hand, if your portfolio were to include smaller capitalization stocks or even mid-size stocks, the correlation of these stocks to the S&P 500 would be lower and a futures contract based on the S&P 500 may not be suitable for your hedging purposes. A more appropriate hedge might be constructed using Russell 2000 futures or S&P MidCap 400 futures, both of which are now also available as E-mini contracts. Of course, you would first have to determine how well your portfolio tracks these indexes.

## Futures Accounts & Performance Bond Requirements

A typical investor/trader has an account with a qualified brokerage firm that can deal on most or all of the nation's stock exchanges, including Nasdaq. Most of these accounts are set up to trade stocks, bonds and mutual funds only; the vast majority may not enable an investor to trade futures.

If you wished to trade futures, you would have to open a futures account with a Series 3-Licensed futures broker. Your current brokerage firm may even have a futures division that can execute these trades. If not, you can check CME's Web site ([www.cme.com](http://www.cme.com)) for firms that execute trades on the Exchange. Then, after opening a futures account, you would have to post a performance bond for each futures contract that you trade. Performance bonds are good faith deposits (cash, T-bills or certain securities) required by futures exchanges, deposited with your broker. Gains and losses in futures are “marked-to-market” (i.e., profits and losses are credited/debited to accounts every day). Performance bonds help ensure this process.

## Tax Considerations

The taxation of futures is different from other investments and depends on the status and strategy of the taxpayer. Is the taxpayer a trader? Investor? Dealer? Hedger? Any gains or losses arising from these transactions usually are subject to both the mark-to-market and the 60/40 rule at the end of the tax year. Generally this type of transaction is reported on the appropriate IRS form (Form 6781—Gains/Losses from Section 1256 Contracts and Straddles) and transferred to your Schedule D filing. You should consult your tax advisor to determine which rules apply to you. While tax treatment of an overall hedging strategy may be complicated, the protection that can be offered by such a strategy merits consideration.

## Protecting Your Portfolio

As the table on page 5 shows, many of the largest funds had significant losses during 2001. The S&P 500 Index also declined in value during this time. The table also includes some data on R-squared values. R-squared ranges from 0 to 100 and reflects the percentage of a fund's movements that are explained by movements in its benchmark index. (Caution: R-squared is not a predictor of relative performance or profitability.) An R-squared of 100 means that all movements of a fund are completely explained by movements in the index. Thus, index funds that invest only in S&P 500 stocks will have an R-squared very close to 100. A low R-squared means that very few of the fund's movements are explained by movements in its benchmark index.

## Protecting Your Portfolio—An Illustration

<b>Fund</b>	<b>Decline YTD*</b>	<b>3rd qtr</b>	<b>R<sup>2</sup></b>
Vanguard Index 500	-19.70	-14.72	100
Fidelity Magellan	-19.70	-15.36	96
T Rowe Pr Blue Chip	-23.90	-15.84	94
Janus Fund	-35.27	-25.82	78
Mutual Qualified Z	-10.47	+ 1.30	53
S&P Cash		-15.09	n/a
Dec 01 S&P Futures		-15.85	n/a

\* YTD October 2, 2001

Source: Morningstar and CME Equity Products

## Strategy I: Hedging a portfolio with stock index futures

An investor owns a mutual fund or portfolio of stocks that is highly correlated with the S&P 500 composite index (R-squared = 98). The current value of the portfolio is \$140,000.

**Time frame:** Early November  
**Outlook:** Short term bearish...looking for a decline of at least 10%-15%.  
**Strategy:** Sell 2 E-mini S&P 500 futures contracts to hedge portfolio.\*

**Current S&P 500 index (cash):** 1,400.00 pts.

**Current S&P 500 futures (Dec futures):** 1,415.00 pts.\*\*

\* Each E-mini S&P futures is worth \$70,750 (1415 x \$50 per pt. = \$70,750); thus, two contracts would be required to hedge a \$140,000 portfolio. See CME publication *How to Get Started Trading CME Stock Index Products for details on contract specifications.*

\*\* Futures contracts usually trade at a premium to the cash index due to cost-of-carry factors. As expiration of the futures contract nears, this premium will converge toward zero.

### Outcome:

Four weeks later the S&P 500 declines 15% to 1190.00.  
Investor's portfolio declines 15.5%.  
December futures decline 15.5% to 1195.00.

### Profit/Loss picture:

Value of portfolio early Nov:	\$140,000
Value of portfolio early Dec:	\$118,300
Profit/Loss on portfolio	– \$21,700

Value of E-mini S&P 500 early Nov:	\$70,750 (1415 x 50 = \$70,750)
Value of E-mini S&P 500 early Dec:	\$59,750 (1195 x 50 = \$59,750)
Gain on short hedge	+ \$11,000
x 2 (\$140K portfolio required two futures)	+ \$22,000

### Hedged Portfolio:

Loss on portfolio	– \$21,700
Gain from futures hedge	+ \$22,000
Overall profit/loss	+ \$ 300

### Unhedge Portfolio:

Loss on portfolio	– \$21,700
Gain from futures hedge	n/a
Overall profit/loss	– \$21,700

In this example, the hedge using stock index futures almost fully protected the portfolio against a decline. The decline in the investor's portfolio was offset by gains in the two E-mini S&P futures contracts. This investor showed only a very small loss despite a significant decline in the market of 15%! On the other hand, if the market had advanced, the portfolio's gains would have been offset by losses on the two E-mini S&P 500 futures contracts. If this were to occur the investor would have had to consider removing his hedge by buying back the short futures contracts so he/she could participate in any further upside action.

## Strategy II: Using stock index futures to gain market exposure

An investor is expecting a large cash infusion due to the sale of a business. Cash proceeds (about \$350,000) to be invested in market primarily in high-tech stocks at close of deal in four to five months.

**Problem:** Investor is very bullish near-term, especially on technology stocks. Lacks sufficient cash to construct portfolio immediately.

Strategy: Buy 2 Nasdaq-100 futures contracts (2 contracts are worth approximately \$340,000) or 10 E-mini Nasdaq-100 contracts.

## **Advantages:**

- Easy to execute
- Less costly and more efficient than buying a basket of stocks
- Initial cash outlay (performance bond) much less than \$350,000 (in fact it would be less than 15% of that amount)

If the market rose before the investor received the \$350,000, the futures would also tend to rise, allowing the investor to participate in the advance. Four to five months later, the investor could purchase the stocks. The higher price that he would pay would be offset by the profits in the futures contracts. If the prices of stocks (and therefore the Nasdaq-100) declined, his futures contracts would lose money. However, the cost to purchase his portfolio would also be reduced. This “anticipatory long hedge,” as it is sometimes called, allows the investor to enter the market immediately at a fraction of the cost.

## **What’s the next step?**

For the person interested in using stock index futures to hedge (or as a trading vehicle), CME suggests the following:

- Do your homework! Futures contracts work differently from traditional investments such as stocks, bonds and mutual funds. At the very least you should have a command of some of the basics such as contract specifications, performance bond requirements, and so on. At CME we have several FREE brochures to help educate you on stock index futures and futures in general. Give us a call at 312-648-3721.

- Find a Series 3-Licensed commodity futures broker who can guide you. Talk with several. Find one that you feel comfortable with and that will take the time to help guide you through the learning process as well as help you determine if futures are suitable vehicles for you to trade.
- If your portfolio or fund does not correlate highly with the S&P 500, perhaps it will do so with the Russell 2000, the S&P MidCap 400, the Nasdaq-100 (for portfolios heavy in hi-tech/telecom stocks) or the FORTUNE e-50 Index (for Internet-based portfolios). CME also trades futures on these indexes.

## **Conclusion**

Since their introduction approximately 20 years ago, CME’s stock index futures product line has seen tremendous growth. Much of the success in these products is because of their advantages to large institutions such as banks, pension funds and mutual funds. Used properly, these products provide superb risk management and trading opportunities. Their usefulness, however, is not limited to billion-dollar institutions. Suitable individual investors with adequate risk capital can successfully employ these vehicles too. We urge you to consider the opportunities with CME’s stock index products.

## **For further information**

### **Publications:**

- *How to Get Started Trading CME Index Products*
- *Using E-mini Stock Index Futures and Options*
- *CME E-mini Stock Index Futures: A Powerful Way to Trade the Markets*

**CME Web site:** [www.cme.com](http://www.cme.com)



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