Equity Futures Contracts: A New Stock Portfolio Management Tool

by Robert E. Whaley

Equity futures contracts are a relatively new financial instrument in the security marketplace. They began trading in early 1982 and are now offered on three major futures exchanges. While the volume of trading activity of these instruments has increased dramatically since their introduction, many equity portfolio managers such as those of mutual funds, pension funds and various trusts have been slow to exploit the opportunities afforded by these new instruments.

In general, a futures contract is a binding agreement to consummate an exchange of a commodity or a financial instrument at a specified future date at a price agreed upon today. Traditionally a futures contract has been thought of as being written on a commodity such as wheat. The seller of a September wheat futures contract agrees to make delivery of 5,000 bushels of wheat in September. On the other side of the agreement, the buyer agrees to take delivery at that time. Although no exchange of cash or wheat takes place today, the buyer and seller agree upon the price, say, $4.50 per bushel. When September finally rolls around, the buyer of the futures contract receives the 5,000 bushels of wheat, whereupon he pays the seller $4.50 x 5,000 or $22,500.

During the past few years, futures contracts on financial instruments and on certain indexes have been introduced. One such futures contract is written on the S&P 500 Stock Index and is traded on the Chicago Mercantile Exchange. Like a futures contract on a commodity, the buyer and seller agree upon a price today for a transaction that will occur at a future date. Unlike a futures contract on a commodity, however, there is no delivery, but instead, the buyer and seller settle their agreement in cash.

To demonstrate the cash settlement idea, consider the June/84 S&P 500 futures contract. By exchange convention the S&P 500 equity futures expire on the third Thursday of the contract month or, in this case, June 21, 1984. If the current June/84 S&P 500 futures index level is 162.00, the buyer of the contract today makes a commitment to buy "the S&P 500 stock portfolio" on June 21 for 162.00 x $500 or $81,000. The seller, on the other hand, makes a commitment to deliver a cash equivalent of "the S&P 500 stock portfolio." If, on June 21, the S&P 500 Index level is above 162.00, say, 165.00, the seller pays the buyer (165.00 -162.00) x $500 or $1,500 in cash, and both obligations are settled. If the Index is at 160.00 on settlement day, the buyer pays the seller (162.00 - 160.00) x $500 or $1,000, and again, the obligations are settled.

Insuring Portfolio's Value

Just as farmers use wheat futures contracts to insure the value of their crop at harvest, stock portfolio managers may use equity futures contracts to insure the value of their portfolio holdings. In order to understand how stock holdings may be hedged using equity futures, consider the risk faced by the portfolio holder. The risk of a particular stock can be divided into two parts: (a) market risk, or risk that is related to overall movements in the stock market, and (b) diversifiable risk, or risk that is related to idiosyncrasies of the firm.

By holding many stocks in a portfolio, diversifiable risk can be eliminated because, in a given period, the fortunes of some of the firms will be offset by the misfortunes of others. Once as few as 15 or 20 randomly selected stocks are included in a portfolio, diversifiable risk is virtually eliminated and only market risk remains. The nature of market risk is simple: If the market goes up, the value of the portfolio goes up commensurately; if the market falls, the value of the portfolio falls.

Prior to the advent of equity futures markets, portfolio managers would react to an expected short-term drop in the market by holding their portfolio and hoping for the best — the "grin-and-bear-it" strategy — or by liquidating some or all of their equity position and buying short-term debt instruments such as Treasury bills. Once the bottom of the market decline was reached, the T-bills were sold and the equity portfolio reconstructed. Although the T-bill strategy temporarily eliminates market risk, the fund faces the transaction costs associated with the sale and subsequent repurchase of the shares.

To illustrate the effects of an adverse market movement on the value of a widely diversified stock portfolio, consider a fund which holds a $1 million stock portfolio similar in composition to the S&P 500. The current dividend yield on the portfolio is assumed to be 6% on an annualized basis. The fund's research staff predicts that the S&P 500 Index will fall from its current level of 165 to 150 (or by 10 percent) over the next three months. At the end of the three-month period, the market is expected to recover. If the research staff's prediction is correct and the market does fall to 150, the value of the stock

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portfolio at the end of three months will be $915,000, reflecting dividend income of $1 million x .06 x 3 months/12 months or $15,000 and capital loss of $1 million x .10 or $100,000.

Assuming three-month Treasury bills are yielding 10% on an annualized basis, the T-bill strategy would fare much better. The interest income would be $1 million x .10 x 3 months/12 months or $25,000. The transaction costs would be about 50 cents per share on 31,250 shares when the stocks are sold and then again when they are repurchased, or about $31,250 in total. The value of the equity portfolio, when it is reconstructed three months hence, would therefore be $1 million + 25,000 − 31,250 or $993,750, which is $78,750 higher than the "grin-and-bear it" strategy.

An Alternate Method

As an alternative to liquidating the stock portfolio and buying T-bills, the market risk of the portfolio may also be eliminated by buying equity futures. If the futures index level today is 166.65, the fund manager could sell $1 million/(166.65 x $500) or 12 S&P 500 equity futures contracts. At the end of three months, the fund would receive $15,000 in dividend income, lose $100,000 in capital depreciation on the stock portfolio and gain (150.00 − 166.65) x 500 x 12 or $99,900 on the futures position. The value of the portfolio would therefore be $1,014,900, gross of transaction costs, or $1,014,600, net, given a reasonable estimate of futures commissions is $25 per contract round-turn. The futures strategy would therefore yield $20,850 more than the T-bill strategy and $99,600 more than the "grin-and-bear-it" strategy.

The above example is intended only to be illustrative in nature. Other considerations are necessary when using equity futures contracts to short-hedge the value of a stock portfolio. The principle underlying the demonstration, however, remains intact. Equity futures contracts are an effective, inexpensive means of reducing or eliminating the market risk of an equity portfolio, a means which will be more frequently employed by equity fund managers in the future given the high costs of transacting in the stock market.