Margin: A Portfolio Lever for Buying and Selling Stock

Borrowing money through a margin account to purchase securities can be a profitable and wise investment strategy. But debt creates financial leverage: The money in a full payment purchase can instead be used as a type of down payment to buy a much larger block of stock. This means that gains—and losses—in a margin account are magnified, and returns will vary considerably more than with full payment. In short, buying stock on margin is riskier, and individuals who want to use this strategy should know the ins and outs of trading on margin.

What Is It?

Margin is the percent of the purchase price that an investor must put up or maintain for a security transaction; the rest of the purchase price is paid for by a broker, who charges interest on this loan. When used to buy stock, the securities are left on deposit in street name with the broker and are collateral for the amount the investor has borrowed. This collateral fluctuates in value as the share price fluctuates.

"Initial margin," regulated by the Federal Reserve, is the percent of a security's value that an investor must initially put up. Currently, the initial margin required for common stocks, convertible securities and short sales is 50%. The higher the initial margin requirement, the less the amount that can be borrowed.

A second margin concept is "maintenance margin." This is a minimum level of margin that an investor must have in his account to maintain the value of the collateral he has on deposit with the broker. Exchanges and brokerages have set maintenance margin levels: The New York Stock Exchange and FINRA maintenance margin is 25% and most brokerage houses have established higher maintenance margins of 30% (or higher depending on the price of the stock).

If the margin value falls below the maintenance margin, the investor will receive a "margin call" telling him to put up more collateral. If he fails to do anything, the margined securities are sold, the broker is paid and the investor gets whatever is left.

If the value of the investor's margin account rises above the initial margin requirement, cash can be withdrawn from the account. This assumes that the sum total of all stocks and margin accounts of the investor are not restricted. A restricted account is where the sum of all securities and margin debt results in an overall margin that is between the initial margin and maintenance margin. Withdrawing 'excess' funds from an unrestricted account and using the proceeds to purchase more

shares is termed 'pyramiding,' a sometimes suggested but extremely risky investment strategy.

To illustrate the use of margin, say an investor wants to buy 100 shares of stock at $70 per share. The initial margin is 50%, so he puts up half of the $7,000, or $3,500. The broker puts up the remaining portion, and the securities are placed in the investor's account. That remaining portion of securities serves as collateral on the amount that the investor has borrowed from the broker, and he must maintain its value so that it does not drop below 30% of his original total purchase: If this value drops because the share price has dropped, he will receive a margin call, and he must add cash.

At what share price will he receive a margin call?

He will be called when the stock price is equal to one minus the initial margin times the purchase price, divided by one minus the maintenance margin. Assuming an initial margin of 50% and a maintenance level of 30%, he will receive a margin call when the price of the stock drops to 5/7ths of the original purchase price—in this example $50 per share. The derivation for this is presented in Table 1.

Table 1. Margin in a stock purchase

Maintenance margin:

At what stock price will you get a margin call?

$$\text{Margin} = \frac{\text{stock price} - (1 - \text{initial margin})(\text{purchase price})}{\text{stock price}}$$

Rearrange equation to solve for stock price:

$$\text{Stock price} = \frac{(1 - \text{initial margin})(\text{purchase price})}{1 - \text{maintenance margin}}$$

Substitute the given margin levels:

$$\text{Stock price} = \frac{(1 - 0.50)(\text{purchase price})}{1 - 0.30}$$

$$= \frac{5}{7}(\text{purchase price})$$

Using the numbers in the example:

$$= 5/7\ (\$70) = \$50 \text{ per share}$$

The Leverage

The leverage implications of margin purchases are very important. A comparison of a margin transaction to a full payment purchase over a year reveals the variability in return caused by borrowing.

In the above example, the investor who wants to buy 100 shares of stock at $70 per share can either pay full price for it, for a total of $7,000, or he can buy it on margin, putting up only half the money, $3,500, and borrowing the rest at, say, 7% interest.

At the end of a year, the price has risen to $90 per share. His return, if he paid all cash, would be 28.6%: The final value, $9,000, minus the initial investment, $7,000; divided by the initial

investment. If he had bought the stock on margin, his return would be 50.0%: The final value, $9,000, minus the initial stock value, $7,000, minus interest on the amount borrowed, $3,500 at 7% or $245; divided by the investor's initial investment, $3,500.

If the stock price had fallen by the end of a year to $50 per share, the returns would have been a loss of 28.6% for full payment, compared to a loss of 64.0% for the margined account.

As you can see, the financial leverage provided by using margin magnifies gains and losses. In fact, a 50% initial margin requirement results in a gains and loss multiplier of two. It is no wonder that when security prices fall precipitously, margin investors sell securities, aggravating the decline. The threat of margin calls and leverage are powerful incentives to sell.

This multiplier effect does not take into consideration interest on the margin. Of course, this interest must be paid regardless of the stock price movement.

Short Selling

Short sales are also subject to margin requirements and have some additional unique features.

In short selling, an investor borrows securities that he then turns around and sells. He is anticipating that the price will decline, at which point he will repurchase the securities at the lower price and return them to the lender; the difference between the price he gets for the initial sale and the price he must pay to repurchase the shares is his profit.

For example, an investor borrows 100 shares of a stock that is selling for $70 per share; he turns around and sells it at that price, netting him $7,000. The stock price then falls to $50 per share. He repurchases the 100 shares for a total of $5,000 and returns them, for a profit of $2,000.

When an investor shorts a security, the proceeds from the sale are left on deposit with the broker, and generally no interest is paid on this money. This idle (to the investor) cash earns money for the brokerage house since it can invest the money in short-term money market instruments; this is why brokerage houses are big lenders of securities for short sale purposes.

ln addition to the proceeds, the short seller must deposit cash or securities as initial margin.

Margin calculations are a little more complicated in a short sale compared to a margined stock purchase. In the latter, the stock serves as collateral, and maintaining the margin simply involves maintaining the relative value of the collateral.

However, in a short sale, it is the "borrowed" amount that varies, since the investor must repurchase the securities at the market price to return to the broker. Initially, the investor puts up initial margin equal to 50% of the value of the securities he has borrowed; if these securities increase in value, he must put up more cash to maintain the percentage level.

An Example of Short Selling

Say an investor decided to sell short 100 shares of stock at $70 per share. To do this, he deposits into his account 50% of the total value, or $3,500; he borrows the securities from the broker, sells them and puts the proceeds, $7,000, into his account. He now has $10,500 in his account.

His margin is the amount he would be left with if he were to buy the stock at the current market price and return it to the broker. Initially, this is $10,500 minus $7,000, or $3,500. If the value of the shares increases, the amount the investor is left with would decrease; if this level decreases to below 30% of the value of the shares, he would get a margin call.

At what price will the investor get a margin call?

He will receive a margin call when the stock price hits one plus the initial margin times the purchase price, divided by one plus the maintenance margin. Assuming an initial margin of 50% and a maintenance margin of 30%, this works out to 15/13ths of the original share price. In the example, that price is $80.77 per share. The derivation for this is presented in Table 2.

Table 2. Selling short

Maintenance margin:

At what stock price will you get a margin call?

$$\text{Margin} = \frac{\text{purchase price} + (\text{initial margin})(\text{purchase price}) - \text{stock price}}{\text{stock price}}$$

Rearrange equation to solve for stock price:

$$\text{Stock price} = \frac{1 + (\text{initial margin})(\text{purchase price})}{(1 + \text{maintenance margin})}$$

Substitute the given margin levels:

$$\text{Stock price} = \frac{(1 + 0.50)}{(1 + 0.30)}(\text{purchase price})$$

$$= \frac{15}{13}(\text{purchase price})$$

Using the numbers in the example:

$$= 15/13\ (\$70) = \$80.77 \text{ per share}$$

When the short seller receives a margin call, he must put up more collateral or his short position will be liquidated. In this case, the investor would be left with $10,500 minus $8,077, or $2,423. Since he put $3,500 in initial margin, his loss is $1,077 ($3,500 minus $2,423). And his annual return before transaction costs, taxes and dividends is his loss divided by his initial investment of $3,500, or –30.8%.

In this example, the stock price increased only 15.4%, from $70 per share to $80.77; yet this created a 30.8% loss—a magnification factor of two. As in long margin positions, this leverage impact causes short investors to "run for cover" when there is a sharp change in stock price and may exaggerate the price move.

In short sales, two conditions are important:

- Any cash dividends paid on the shorted stock are owed to the lender and are a liability to the short seller; they must be paid by the short seller to the lender. It takes a strong conviction of a declining stock price to justify shorting a stock that is paying a high dividend.
- Stocks that have dropped more than 10% in one day cannot be shorted. This alternative uptick rule is designed to restrict short selling from further driving down the price of a stock. It enables long sellers to stand in the front of the line and sell their shares before any short sellers once the circuit breaker is triggered.

A short position can be held indefinitely as long as the maintenance margin is maintained, all cash dividends are paid and the stock is readily available to borrow.

Shorting to Reduce Risk

Short positions can also be taken to reduce risk rather than increase risk. One example is to hedge or "short against the box." The box is a safety deposit box and implies that the stock is already owned and the investor is shorting an equal amount of stock. No matter what happens to the stock price, this hedge means that gains or losses on the short position offset exactly gains or losses on the actual stock held.

Why set up this kind of hedge? It allows you to carry a gain over to the next tax year or it allows you to vote the stock without bearing any price risk. What you cannot do, however, is use a short hedge to turn a short-term gain into a long-term gain.

The IRS is savvy, and you should be, too, if you are going to employ margin or short selling in your investment strategy.