

## Bochanski Capital Advisors Case Scenario

Bochanski Capital Advisors (BCA) is a private wealth management firm. The firm specializes in serving entrepreneurial individuals who became wealthy by founding and operating private businesses. Dave Bochanski, CEO, is responsible for client relationship management, compliance, and operations. Kevin Orr is BCA's chief investment officer. He is supported by Morgan Beauregard, an analyst.

Dan and Kate Smith are clients of BCA. The Smiths are PhD chemists and, 15 years ago, founded a drug development company that patented several new drug compounds. Three years ago, the Smiths sold their company to Avet Pharmaceutical Company (Avet) for \$15 million. The Smiths received \$5 million in Avet stock and \$10 million in cash, of which \$5 million was used to pay capital gains taxes.

The Smiths hired BCA shortly after the company's sale. BCA initially sold \$2.5 million of Avet Stock and used the proceeds to purchase \$2.5 million of the S&P 500 Index ETF. BCA then invested the \$5.0 million of cash into US Treasury intermediate-term notes. The portfolio has since appreciated to \$11.5 million. Its holdings continue to include Avet shares (\$3.0 million current value), S&P 500 exchange-traded funds, or ETFs (\$3.0 million current value), and US Treasury notes (\$5.5 million current value). The Smiths are meeting with BCA to discuss how derivatives strategies, such as options, futures, and swaps, may be used to enhance the portfolio's risk-adjusted returns.

Orr explains that the 10% total return for the Treasury portfolio since its inception is largely the result of an interest rate decline. Orr believes that interest rates will continue to decline over the coming year, and he suggests that the duration of the US Treasury portfolio increase from three years to four years.

Bochanski adds that BCA's expectation for continued declines in interest rates reflects the firm's generally pessimistic macroeconomic outlook. He recommends that price risk be eliminated for some portion of the S&P 500 ETF allocation, suggesting that "this can be accomplished by selling appropriate numbers of futures contracts on the S&P 500 or by constructing a synthetic short of an appropriate size."

Dan Smith generally agrees with Bochanski's macroeconomic outlook. However, he does not want to reduce his exposure to the S&P 500 Index in the short term. He believes that any downturn will not occur for at least six months and that the price level of the S&P 500 is likely to remain relatively flat during this time frame. Orr suggests that using covered call options are an investment portfolio strategy to consider, stating that these are commonly used by both individual and institutional investors who share an equity market view similar to Smith's.

Bochanski cautions that covered call options are not as effective as protective put positions in protecting the portfolio against any future downturn. He comments, “Protective put positions are analogous to insurance policies.” When implementing protective put positions, Bochanski states that factors he considers are stock price and put exercise price. Upon thinking about Bochanski’s statement, Dan Smith states that he would consider time value and upfront premium. Beauregard adds that she considers stock volatility and time until expiration.

Kate Smith asks about the costs of purchasing equity options and the amount of money an investor might make, or lose, by using them within an equity portfolio. Bochanski states that investors who purchase equity options pay a premium, which represents their maximum loss. Investors who sell equity options collect a premium, but face losses should the price of the underlying equity increase above (or decline below) the exercise price for sold calls (or sold puts) by the option’s expiration. Bochanski provides options premiums for various Avet call and put options in Exhibit 1. Avet’s current share price is \$31.75.

EXHIBIT 1 AVET OPTION PREMIUMS (\$)						
Calls				Puts		
Expiration			Exercise Price	Expiration		
1 Month	2 Months	3 Months		1 Month	2 Months	3 Months
0.25	0.50	0.75	30.00	3.00	2.75	2.50
0.50	0.75	1.00	31.00	1.75	1.50	1.25
1.00	1.25	1.50	32.00	0.75	0.50	0.25

Bochanski states that the information in the options premium table enables BCA to calculate maximum profit and loss, breakeven point, value at expiration, and profit at expiration for various options strategies, including both covered calls and protective puts.

1Q. With respect to BCA's macroeconomic outlook, is Bochnaski's recommendation most likely correct?

- A. No, he is incorrect with regard to the synthetic position.
- B. Yes.
- C. No, he is incorrect with regard to futures.

2Q. With respect to covered calls, which investment objective most likely relates to Smith's six-month view?

- A. Improving on the market
- B. Income generation
- C. Target price realization

3Q. In comparing insurance policies to protective put positions, whose statements most likely relate to the amount of loss that the investor is willing to bear?

- A. Bochanski
- B. Smith
- C. Beauregard

4Q. Based on Exhibit 1, the maximum loss for a protective put using two-month put options with an exercise price of \$31.00 is most likely:

- A. \$2.25.
- B. \$.75.
- C. \$1.50.

5Q. Based on Exhibit 1, if the stock price at expiration is \$34.00 and the calls have an exercise price of \$32.00, the profit at expiration for a three-month covered call is most likely:

- A. \$1.50.
- B. \$1.75.
- C. \$3.50.

Answer:

## 1 Solution

B is correct. Dave Bochanski's recommendation is correct with respect to both futures and a synthetic short. A short futures causes that amount of the portfolio that is hedged to become "fixed" in value. A synthetic short is composed of a combination of a short call and a long put position of equal amounts and at the same exercise price. Both a short futures and a synthetic short increase in value if the value of the S&P 500 Index declines, thus hedging the underlying long exposure.

A is incorrect because bochanski's recommendation is correct with respect to the synthetic position.

C is incorrect because bochanski's recommendation is correct with respect to futures.

## 2 Solution

B is correct. The primary motivation for covered call options is income generation. The investor believes that the price of the underlying will remain flat (will not increase above the call exercise price). The option premium is considered to be income. However, in considering the return distribution, the investor gives up all gains above the exercise price. The intention is to earn income, not reduce the portfolio's exposure to the S&P 500.

A is incorrect because to improve on the market, an investor will establish a covered call option position in which the exercise price is below the current price. Because of the option's time value, the option premium will be greater than the difference between the current price and the exercise price. Presuming that the stock price remains above the exercise price, the stock will be sold at the exercise price on the option expiration date. By utilizing a covered call option, the investor has improved the selling price from today's current price to an amount that equals the exercise price plus the option premium. In this context, using covered calls intentionally considers that the S&P 500 position will be reduced.

C is incorrect because to realize a target price, an investor will establish a covered call option position in which the exercise price is near (typically slightly below) the investor's target selling price. Target price realization is considered to contain the motivations of both income generation and improving on the market. Should the stock price not increase above the exercise price at expiration, a new covered call option may be established in order to generate income. Should the stock price increase above the exercise price at expiration, then the stock is sold at the exercise price (the investor's target selling price). In this context, using covered calls

intentionally considers that the portfolio's exposure to the S&P 500 might be reduced.

### 3 Solution

A is correct. For an insurance policy, the amount of the loss that the insured is willing to bear is known as the deductible. For a protective put option, this amount is equivalent to the difference between the stock price and the put exercise price. Bochanski's statement relates to the deductible.

B is incorrect because a protective put's time value and an insurance policy's premium are considered to be equivalent. Neither of these are related to the protective put/insurance policy deductible.

C is incorrect because a protective put's stock volatility is analogous to the likelihood of loss for an insurance policy. A protective put's time until expiration is analogous to the term of an insurance policy. None of these are related to the protective put/insurance policy deductible.

### 4 Solution

A is correct. Maximum loss =  $S_0 - X + p_0 = \$2.25$  = Stock price when position opened - Exercise price + Option premium =  $\$31.75 - \$31.00 + \$1.50 = \$2.25$  maximum loss.

B is incorrect because the \$1.50 put premium ( $p_0$ ) was not incorporated into the calculation:  $S_0 - X = \$0.75$ .

C is incorrect because the \$1.50 put premium ( $p_0$ ) is one of two components in terms of calculating the maximum loss. The difference between the stock price and the put strike is incorrectly not included: ( $p_0$ ) = \$1.50.

### 5 Solution

B is correct. Profit at expiration =  $S_T - \max[(S_T - X, 0)] + c_0 - S_0 = \$1.75$  = Stock price at option expiration - Option value at expiration + Option premium - Stock price when position opened =  $\$34.00 - \$2.00 + \$1.50 - \$31.75 = \$1.75$  profit at expiration.

C is incorrect because this value is the difference between the stock price at expiration and the stock price when the position was opened plus the option premium. The difference between the stock price at expiration and the stock price when the position was opened (whenever this value is positive) is subtracted, not added, in calculating the profit at expiration:  $S_T - X + c_0 = \$34.00 - \$32.00 + 1.50 = \$3.50$ .

A is incorrect because this value is just the option premium. It does not include the appreciation in the stock price from \$31.75 (when the position is opened) to \$32.00 (the covered call strike):  $c_0 = \$1.50$ .