

Economics 252 – Financial Markets

Spring 2011

Lecture 14: Options Markets

March 30, 2011

Multiple Choice Questions

Question 17.1

Consider a European call option for 100 shares of IBM Corporation, whose strike price is \$170 per share and which matures 18 months from now. What does this option entitle you to do?

- (a) Between now and 18 months from now, you are entitled to make a phone call to the European headquarters of IBM Corporation to inquire about the value of 100 shares of IBM.
- (b) Between now and 18 months from now, you have the right, but not the obligation to purchase 100 shares of IBM Corporation for \$170 per share.
- (c) At the maturity date, that is 18 months from now, you have the right, but not the obligation to sell 100 shares of IBM Corporation for \$170 per share.
- (d) At the maturity date, that is 18 months from now, you have the right, but not the obligation to purchase 100 shares of IBM Corporation for \$170 per share.

Question 17.2

Professor Shiller outlines two purposes of option contracts. What are these two purposes?

(More than one answer may apply.)

- (a) A theoretical purpose: Options contribute to the price discovery process for their underlying.
- (b) A gambling purpose: Options do not satisfy any useful purpose for society, they are rather pure gambling and speculative devices.
- (c) A behavioral purpose: Options increase the salience of the underlying for the option holder and increase this person's attention on the underlying.
- (d) A real estate purpose: When purchasing a house in the U.S., the buyer of the house is legally required to purchase a put option on the value of the house.

Question 17.3

Consider a European call-option and a European put-option, written on the same underlying asset. Both options have the same strike price and the same maturity date. What does the put-call parity imply about the price of these two options? (More than one answer may apply.)

- (a) Independent of the value of the underlying asset, both options must have exactly the same price before and at maturity.
- (b) At the maturity date, the price of the call minus the price of the put equals the price of the underlying asset minus the (common) strike price.
- (c) Before the maturity date, the price of the call minus the price of the put equals the current price of the underlying asset minus the appropriately discounted (common) strike price.
- (d) The price of both options is always equal to the current value of the underlying asset.

Question 17.4

The stock price of a company today is \$30. Suppose that, a year from now, the stock is worth either \$45 or \$15. Assume that the risk-free rate between today and a year from now is 10% annually. Consider a European call option written on one share of this company, which has a \$34 strike price and which matures a year from now. What is the value of this call option?

- (a) \$11.
- (b) \$6.
- (c) \$5.
- (d) \$0.

Question 17.5

What is meant by the implied volatility of the S&P 500 index?

- (a) This is the actual volatility of the S&P 500 index, as computed from historical price levels.
- (b) Using the Black-Scholes Option Pricing formula, it is possible to use available market data infer the variable σ in this formula. This deduced variable is referred to as the implied volatility of the underlying asset, e.g. the S&P 500 index. It is a forward-looking measure of volatility.
- (c) Using the Black-Scholes Option Pricing formula, it is possible to use available market data infer the variable σ in this formula. This deduced variable is referred to as the implied volatility of the underlying asset, e.g. the S&P 500 index. It is a backward-looking measure of volatility.
- (d) This is the volatility of the S&P 500, as inferred from the levels of the FTSE 100 in the U.K., the CAC 40 in France, and the DAX in Germany.

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Correct Answers

17.1: (d)

17.2: (a) and (c)

17.3: (b) and (c)

17.4: (b)

17.5: (b)