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 $\sigma$ 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 $\sigma$ 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.
Correct Answers

17.1: (d)
17.2: (a) and (c)
17.3: (b) and (c)
17.4: (b)
17.5: (b)