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Question 1

Question Type: MultipleChoice

The rate of dividend on a stock goes up. What is the effect on the price of a put option on this stock?

Options:

A- It may affect the put value either way depending upon the risk-free rate

B- It increases the value of the put

C- It decreases the value of the put

D- It does not affect the value of the put

Answer:

B

Explanation:

Everything else remaining the same, an increase in the rate of dividends causes the value of call options to fall and the value of put options to rise. Therefore, Choice 'b' is the correct answer. (In the exam, the question could address either a call or a put option, so be

aware of the answer in either case).

To understand this, consider how dividends are accounted for when valuing an option using the Black Scholes model. Future dividends are discounted to the present using the risk free rate and this discounted value is reduced from the spot price used in the BSM valuation. Effectively, this reduces the spot price used in the BSM formula. When the spot price reduces, and the exercise price remains the same, then the value of the call option goes down. In the same way, when spot price is reduced by the present value of dividends (and the exercise price stays the same), obviously the put option becomes more valuable. Therefore an increase in the rate of dividends increases the value of the put option.

There is another intuitive way to think about this: A call option is like a long position in the stock, but the holder of the call option is not entitled to receive dividends (unlike the holder of the stock). Since the holder of the call option has to forego the dividends, he is willing to pay less for the option; or in other words, the value of the call reduces.

In the same way, a put option is like having a short position in the stock. The holder of the short position has to borrow the stock in order to get into the short position in the first place. When dividends are paid, the holder of the short stock position has to make good any dividends that might be paid to the lender of the stock. The holder of a put option does not have to make any such payments. Therefore the put option is more valuable, and the existence of dividends (or an increase in dividends) increases the value of the put option.

(Try this out using the Black Scholes Excel model given under the tutorials by varying the spot price.)

Question 2

Question Type: **MultipleChoice**

The rate of dividend on a stock goes up. What is the effect on the price of a call option on this stock?

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C- It increases the value of the call

D- It does not affect the value of the call

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Question 3

Question Type: **MultipleChoice**

[According to the PRMIA study guide for Exam 1, Simple Exotics and Convertible Bonds have been excluded from the syllabus. You may choose to ignore this question. It appears here solely because the Handbook continues to have these chapters.]

A digital cash-or-nothing option can be hedged reasonably effectively using:

Options:

A- a long call and a long put with a higher strike

B- a long call and a short call with a lower strike

C- a long call and a short call with a higher strike

D- a short call and a long put with a higher strike

Answer:

C

Explanation:

Consider a long vanilla call at a strike of K1, and a short call with a strike price of K2 so that K2>K1. If you construct the payoff diagrams for these option positions, you will see that the combined payoff resembles very closely the payoff of a digital cash-or-nothing option. By bringing K2 and K1 closer together, we can make it very close to a digital cash-or-nothing option. Therefore Choice 'c' is the correct answer.

Question 4

Question Type: MultipleChoice

[According to the PRMIA study guide for Exam 1, Simple Exotics and Convertible Bonds have been excluded from the syllabus. You may choose to ignore this question. It appears here solely because the Handbook continues to have these chapters.]

Which of the following statements are true for a contingent premium option:

1. They are also called 'pay-later' options

II. Premiums are due only if the option expires in the money

III. They are a combination of a vanilla option and an appropriate number of cash-or-nothing options

IV. They are preferred because the premiums are always less than those on equivalent vanilla options

Options:

A- II, III and IV

B- I, II and III

C- I, II, III and IV

D- I, II and IV

Answer:

B

Explanation:

Contingent premium options are options where no premiums are due upfront, and are due only at expiry and only if the option finishes in the money. (If this sounds too good to be true, remember that at expiry it is possible that the premiums due exceed the payoffs from the option. So there is no free lunch.) For this reason they are also called pay-later options.

They are simple combinations of a vanilla option and the 'right' number of cash-or-nothing options. The buyer of a contingent premium option has effectively purchased a vanilla option and sold enough number of cash-or-nothing options so that the net premium due at inception is zero.

Therefore statement I, II and III are correct and Choice 'b' is the correct answer.

Question 5

Question Type: MultipleChoice

[According to the PRMIA study guide for Exam 1, Simple Exotics and Convertible Bonds have been excluded from the syllabus. You may choose to ignore this question. It appears here solely because the Handbook continues to have these chapters.]

A long call position in an asset-or-nothing option has the same payoff as:

Options:

A- two long cash-or-nothing calls combined with a put at the same strike

B- a contingent premium option

C- a short cash-or-nothing call and a short vanilla call

D- a long cash-or-nothing call and a long vanilla call

Answer:

D

Explanation:

A cash or nothing call is one that pays a fixed amount if the underlying exceeds a certain threshold, or nothing. An asset or nothing call is the same as the cash or nothing call except that instead of paying a fixed amount, it 'pays' the asset. Therefore the payoff profile of a long asset or nothing call has the same payoff as a long cash or nothing call and a long vanilla call.

This is best considered by building payoff diagrams which will show how the two positions are economically equivalent. Choice 'd' is the correct answer, and the rest are not.

Question 6

Question Type: MultipleChoice

[According to the PRMIA study guide for Exam 1, Simple Exotics and Convertible Bonds have been excluded from the syllabus. You may choose to ignore this question. It appears here solely because the Handbook continues to have these chapters.]

The use of numerical pricing methods over analytical methods for valuing exotic options is resorted to allow for which of the following reasons:

1. Efficient valuation

II. Allowing for stochastic volatility

III. Accommodating discontinuous asset prices

IV. Allowing for complex payoffs

Options:

A- I, II and III

B- II, III and IV

C- I, II, III and IV

D- I

Answer:

B

Explanation:

Analytical methods are more 'efficient' than numerical methods in terms of computing power required, consistency of results and providing clarity on the inputs driving the results. Therefore 'efficient valuation' is not a reason to adopt numerical pricing methods over analytical methods.

It is much easier to incorporate changing stochastic volatility, discontinuous asset prices or other complex payoffs using numerical pricing methods. So these certainly represent good reasons to use numerical pricing methods for valuing exotics.

Therefore Choice 'b' is the correct answer.

Question 7

Question Type: MultipleChoice

[According to the PRMIA study guide for Exam 1, Simple Exotics and Convertible Bonds have been excluded from the syllabus. You may choose to ignore this question. It appears here solely because the Handbook continues to have these chapters.]

Which of the following is not an approach to attempt to value to a convertible security:

Options:

A- DCF analysis

B- Bootstrapping

C- Lower of bond value and value of converted shares

D- Bond value plus equity option value

Answer:

B

Explanation:

Bootstrapping is not one of the various approaches to try to value a convertible security. The rest of them are, and therefore Choice 'b' is the correct answer.

Question 8

Question Type: MultipleChoice

A bank holds a portfolio of residential mortgages. An increase in the volatility of mortgage interest rates leads to:

Options:

A- A decrease in the value of the mortgage portfolio

B- An increase in the value of the mortgage portfolio

C- An increase in the duration of the mortgage portfolio

D- Both duration and value of the mortgage portfolio stay unchanged

Answer:

A

Explanation:

A residential mortgage carries a prepayment option for the borrower, where in the event of a decrease in interest rates they are likely to repay the mortgage and refinance at the new lower rate. If rates go up, the bank does not have a similar option. If the volatility of the underlying interest rates increases, mortgage holders are more likely to be faced with new rates that are sufficiently lower to persuade them to refinance. This reduces the ability of the bank to continue to earn the higher interest rate it was earning before.

Therefore an increase in volatility of the mortgage interest rates decreases the value of the mortgage portfolio.

The same rationale applies to callable bonds, where the borrower has the option to call the bond.