

Unit 14 - Week 12: Risk-Neutral Pricing in Continuous-Time (Part 2)

Course outline

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Week 0

Week 1: Introduction to Financial Markets and Instruments

Week 2: Time Value of Money and Riskfree Assets

Week 3: Modern Portfolio Theory (Part 1)

Week 4: Modern Portfolio Theory (Part 2)

Week 5: Fundamentals of Derivatives

Week 6: Derivative pricing by replication in binomial model

Week 7: Risk-Neutral Pricing in Discrete-Time (Part 1)

Week 8: Risk-Neutral Pricing in Discrete-Time (Part 2)

Week 9: Introductory Stochastic Calculus (Part 1)

Week 10: Introductory Stochastic Calculus (Part 2)

Week 11: Risk-Neutral Pricing in Continuous-Time (Part 1)

Week 12: Risk-Neutral Pricing in Continuous-Time (Part 2)

- Lec 34: MRT and Hedging, Multidimensional Girsanov and MRT
- Lec 35: Multidimensional BSM Model, Fundamental Theorems of Asset Pricing
- Lec 36: BSM Model with Dividend-Paying Stocks

Quiz : Assignment 12

Feedback Form

Solution: Assignment 12

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Live Session

Assignment 12

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-10-23, 23:59 IST.

1) State whether the following statement is TRUE or FALSE:

2 points

In the classical BSM model (with given parameters α , σ and r), consider an option that pays an amount C at maturity T if the underlying stock price at T is greater than or equal to K , and pays nothing otherwise. The risk-neutral price at time 0 of such an option with strike K and cash component C is given by $V_0 = Ce^{-rT}N(d_-)$, where $d_- = \frac{1}{\sigma\sqrt{T}}[\ln(S_0/K) + (r - \sigma^2/2)T]$.

- TRUE
 FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE

2) State whether the following statement is TRUE or FALSE:

1 point

The martingale representation theorem (MRT) will hold true with respect to any filtration for the underlying Brownian motion.

- TRUE
 FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
FALSE

3) In the classical BSM model (with given parameters α , σ and r), it is given that the current price of the stock is 60, the call option currently sells for 0.15 more than the put option, both the call option and put option will expire in 4 years, and both the call option and put option have a strike price of 70. Then, the continuously compounded riskfree interest rate (in percentage) equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 3.80,4.00

2 points

4) In the classical BSM model (with given parameters α , σ and r), suppose that the stock price today is $S_t = 10$, the riskfree interest rate is $r = 0\%$, and the time to maturity is 6 months from now. Consider an option V_T whose BSM price at time t is given by the function $V_t = F(t, S_t) = S_t^2 e^{2(T-t)}$, where the time is in annual terms. Then, the volatility (in percentage) of the stock equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 135,145

2 points

5) In the classical BSM model (with given parameters α , σ and r), assume that an investor buys 1000 stocks of ABC company and holds them for 3 years. Each of the stocks held pays a continuous dividend yield of 5% per annum and the investor reinvests all the dividends (in the same stock) when they are paid. The number of shares that the investor would have at the end of 3 years equals:

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1150,1170

2 points

6) State whether the following statement is TRUE or FALSE:

1 point

The binomial model as well as the classical BSM model are **complete** market models.

- TRUE
 FALSE

No, the answer is incorrect.
Score: 0

Accepted Answers:
TRUE