

Topic 52: Quantifying Volatility in VaR Models

Question #1 of 66

Question ID: 439320

The Westover Fund is a portfolio consisting of 42 percent fixed income investments and 58 percent equity investments. The manager of the Westover Fund recently estimated that the annual VAR(5 percent), assuming a 250-day year, for the entire portfolio was \$1,367,000 based on the portfolio's market value of \$12,428,000 and a correlation coefficient between stocks and bonds of zero. If the annual loss in the equity position is only expected to exceed \$1,153,000 5 percent of the time, then the daily expected loss in the bond position that will be exceeded 5 percent of the time is *closest* to:

- A) \$21,163.
 - B) \$46,445.
 - C) \$72,623.
 - D) \$55,171.
-

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Question ID: 738647

If a 10-day VAR is \$15,000,000, the 250-day VAR, assuming no change in confidence level, would be:

- A) \$237,000,000.
 - B) \$75,000,000.
 - C) \$7,500,000.
 - D) \$23,700,000.
-

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Question ID: 439352

RiskMetrics uses the following value for the decay factor of daily data:

- A) 0.97.
 - B) 0.92.
 - C) 0.94.
 - D) 0.95.
-

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1 =	0.96		
The value at risk measure for the fifth percentile using the hybrid approach is closest to:			
Rank	Ten Lowest Returns	Number of Past Periods	Hybrid Weight
A) -4.10%	-4.30%	7	0.0318
B) -3.90%	-3.90%	10	0.0282
C) -4.04%	-3.70%	15	0.0230
4	-3.50%	20	0.0187
5	-3.00%	17	0.0212
6	-2.90%	28	0.0135
7	-2.60%	32	0.0115

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Question ID: 439311

If the expected change in a diversified income portfolio is \$520,000 and the standard deviation of the estimated change in the portfolio is \$2,275,500, the 95 percent value-at-risk (VAR) for this portfolio is closest to:

- A) \$3,743,197.50. -2.30% 62 0.0034
- B) \$855,400.00.
- C) \$4,598,597.50.
- D) \$3,223,197.50.

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Question ID: 439323

The minimum amount of money that one could expect to lose with a given probability over a specific period of time is the definition of:

- A) the coefficient of variation.
- B) the hedge ratio.
- C) delta.
- D) value at risk (VAR).

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Question ID: 439318

Which of the following statements about value at risk (VAR) is **TRUE**?

- A) VAR increases with longer holding periods.
- B) VAR decreases with lower probability levels.
- C) VAR is not dependent on the choice of holding period.
- D) VAR is independent of probability level.

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Question ID: 439317

A portfolio comprises 2 stocks: A and B. The correlation of returns of stocks A and B is 0.8. Based on the information below, compute the portfolio's annual VAR at a 5 percent probability level.

Stock	Value	$E(R)$	σ
A	\$75,000	12.0%	15.0%
B	\$25,000	10.8%	10.0%

- A)** \$13,300.
 - B)** \$10,295.
 - C)** \$23,491.
 - D)** \$11,700.
-

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Question ID: 738648

On December 31, 2006, Portfolio A had a market value of \$2,520,000. The historical standard deviation of daily returns was 1.7%. Assuming that Portfolio A is normally distributed, calculate the daily VAR(2.5%) on a dollar basis and state its interpretation. Daily VAR(2.5%) is equal to:

- A)** \$83,966, implying that daily portfolio losses will fall short of this amount 2.5% of the time.
 - B)** \$83,966, implying that daily portfolio losses will only exceed this amount 2.5% of the time.
 - C)** \$70,686, implying that daily portfolio losses will fall short of this amount 2.5% of the time.
 - D)** \$70,686, implying that daily portfolio losses will only exceed this amount 2.5% of the time.
-

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Question ID: 439313

Super Hedge fund has \$20 million in assets. The total return for the past 40 months is given below. What is the monthly value at risk (VAR) of the portfolio at a 5 percent probability level?

<i>Monthly Returns</i>							
-22.46%	9.26%	-4.69%	-20.66%	-2.77%	1.17%	-16.11%	-6.73%
0.57%	12.56%	-18.26%	-32.81%	24.15%	-34.26%	-5.49%	-19.76%
-34.75%	-12.02%	32.74%	-31.35%	13.68%	-31.13%	7.07%	-33.56%
-20.37%	30.27%	31.09%	-3.26%	-14.42%	4.75%	15.63%	-11.57%
7.23%	-20.77%	-19.61%	-2.42%	-30.59%	28.83%	-22.25%	-10.26%

- A)** \$7,200,000.
- B)** \$6,852,000.
- C)** \$9,000,000.
- D)** \$16,725,000.

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Question ID: 439293

A distribution of asset returns that has a significantly higher probability of obtaining large losses is described as:

- A)** right skewed.
 - B)** thin-tailed.
 - C)** left skewed.
 - D)** symmetrical.
-

Question #12 of 66

Question ID: 439331

When would a Monte Carlo simulation be preferable to a historical simulation?

- A)** A large amount of historical data is available.
- B)** Insufficient computer capacity.
- C)** Historical data does not produce favorable results.
- D)** There is only a small amount of historical data.

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Question ID: 439309

Many analysts prefer to use Monte Carlo simulation rather than historical simulation because:

- A) computers can manipulate theoretical data much more quickly than historical data.
 - B) past distributions cannot address changes in correlations or events that have not happened before.
 - C) past data is often proprietary and difficult to obtain.
 - D) it is much easier to generate the required variables.
-

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Question ID: 439341

The price value of a basis point (PVBP) of a \$20 million bond portfolio is \$25,000. Interest rate changes over the next one year are summarized below:

Change in Interest rates	Probability
>+2.50%	1%
+2.00-2.49%	4%
0.00-1.99%	50%
-0.99-0.00%	40%
<-1.00%	5%

Compute VAR for the bond portfolio at 95 percent confidence level.

- A) \$12,500.
 - B) \$2,500,000.
 - C) \$5,000,000.
 - D) \$2,750,000.
-

Question #15 of 66

Question ID: 439304

Which value at risk methodology is *most* subject to model risk?

- A) Monte Carlo simulation.
- B) Parametric.
- C) Historical.
- D) Variance/covariance.

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Question ID: 439297

A large bank currently has a security portfolio with a market value of \$145 million. The daily returns on the bank's portfolio are normally distributed with 80% of the distribution lying within 1.28 standard deviations above and below the mean and 90% of the distribution lying within 1.65 standard deviations above and below the mean. Assuming the standard deviation of the bank's portfolio returns is 1.2%, calculate the VAR(5%) on a one-day basis.

- A)** \$2.87 million.
 - B)** \$2.23 million.
 - C)** cannot be determined from information given.
 - D)** \$2.04 million.
-

Question #17 of 66

Question ID: 439302

The accuracy of a value at risk (VAR) measure:

- A)** is included in the statistic.
 - B)** can only be ascertained after the fact.
 - C)** is one minus the probability level.
 - D)** is complete because the process is deterministic.
-

Question #18 of 66

Question ID: 439326

The most important way in which the Monte Carlo approach to estimating operational VAR differs from the historical method and variance-covariance method is:

- A)** its heavy dependence on historical data.
 - B)** its computational simplicity.
 - C)** it involves repeatedly shocking a model of risk data to produce a range of potential losses.
 - D)** its inability to account for non-linear risk structures.
-

Question #19 of 66

Question ID: 439328

A portfolio comprises 2 stocks: A and B. The correlation of returns of stocks A and B is 0.4. Based on the information below, what is the portfolio's value-at-risk (VAR) at a 5 percent probability level?

Stock	Value	$E(R)$	σ
A	\$85,000	15.0%	18.0%

B	\$15,000	12.0%	10.0%
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- A) \$13,300.
 - B) \$23,491.
 - C) \$1,410.
 - D) \$11,784.
-

Question #20 of 66

Question ID: 439342

Which of the following are advantages of nonparametric methods compared to parametric methods for quantifying volatility?

- I. Nonparametric models require assumptions regarding the entire distribution of returns.
- II. Data is used more efficiently with nonparametric methods than with parametric methods.
- III. Fat tails, skewness, and other deviations from some assumed distribution are no longer a concern in the estimation process for nonparametric methods.
- IV. Multivariate density estimation (MDE) allows for weights to vary based on how relevant the data is to the current market environment by weighting the most recent data more heavily.

- A) I and III.
 - B) III and IV.
 - C) III only.
 - D) I and II.
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Question #21 of 66

Question ID: 439349

Which of the following are true about the RiskMetrics, GARCH, and historical standard deviation approaches to estimate conditional volatility?

- I. RiskMetrics and historical standard deviation assume equal weights on all observations.
- II. RiskMetrics and GARCH are parametric models; historical standard deviation is not.
- III. A decreasing λ suggests a higher relative weight on the most recent data for exponential smoothing models.
- IV. The most recent weight for GARCH exceeds the most recent weight for historical standard deviation, assuming the same high number of observations.

- A) I, II, and IV only.
- B) II and III only.
- C) III and IV only.
- D) II, III, and IV only.

Question #22 of 66

Question ID: 439353

Which of the following statements regarding volatility in VAR models are TRUE? I. The RiskMetrics™ approach is very similar to the GARCH model. II. The historical standard deviation approach creates a variance-covariance matrix that is estimated under the assumption that all asset returns are normally distributed. III. The parametric approach typically assumes asset returns are normally or lognormally distributed with constant volatility. IV. Exponential smoothing methods and the historical standard deviation methods both apply a set of weights to recent past squared returns.

- A)** I, II, and III.
 - B)** I, II, and IV.
 - C)** I, III, and IV.
 - D)** II, III, and IV.
-

Question #23 of 66

Question ID: 439340

One advantage of the Monte Carlo simulation approach over the historical method when calculating VAR is the simulation approach:

- A)** equates past performance to future results.
 - B)** incorporates flexibility in modeling price paths.
 - C)** takes advantage of the normal distribution.
 - D)** makes better use of computing power.
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Question #24 of 66

Question ID: 439298

You wish to estimate VAR using a local valuation method. Which of the following are methods you might use?

- I. Historical simulation.
- II. The delta-normal valuation method.
- III. Monte Carlo simulation.
- IV. The grid Monte Carlo approach.

- A)** III and IV only.
 - B)** II only.
 - C)** I only.
 - D)** I and II only.
-

Question #25 of 66

Question ID: 439338

If a 1-day 95 percent VAR is \$5 million, the 250-day 99 percent VAR level would be *closest* to:

- A) \$55.89 million.
 - B) \$21.00 million.
 - C) \$83.84 million.
 - D) \$111.79 million.
-

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Question ID: 525569

Kiera Reed is a portfolio manager for BCG Investments. Reed manages a \$140,000,000 portfolio consisting of 30 percent European stocks and 70 percent U.S. stocks. If the VAR(1%) of the European stocks is 1.93 percent, or \$810,600, the VAR(1%) of U.S. stocks is 2.13 percent, or \$2,087,400, and the correlation between European and U.S. stocks is 0.62, what is the portfolio VAR(1%) on a percentage and dollar basis?

- A) 1.90% and \$2.90 million.
 - B) 1.90% and \$2.67 million.
 - C) 2.07% and \$2.90 million.
 - D) 2.07% and \$2.67 million.
-

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Question ID: 439362

All of the following are appropriate methods for addressing return aggregation in volatility forecasting methods **EXCEPT:**

- A) for well-diversified portfolios, the strong law of large numbers is required to estimate the volatility of the vector of aggregated returns.
 - B) the RiskMetrics™ approach creates a variance-covariance matrix that is estimated under the assumption that volatility is constant over time.
 - C) the historical simulation approach weights returns based on market values today, regardless of the actual allocation of positions K days ago.
 - D) the historical standard deviation approach creates a variance-covariance matrix that is estimated under the assumption that all asset returns are normally distributed.
-

Questions #28-29 of 66

$\lambda = 0.97$

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K = 150				
Rank	Ten Lowest Returns	Number of Past Periods	Hybrid Weight	Hybrid Cumulative Weight
1	-4.10%	5	0.0268	0.0268
2	-3.80%	7	0.0253	0.0521
3	-3.50%	21	0.0165	0.0686
4	-3.20%	13	0.0210	0.0896
5	-3.10%	28	0.0133	0.1029
6	-2.90%	55	0.0059	0.1088
7	-2.80%	28	0.0133	0.1221
8	-2.60%	28	0.0133	0.1354
9	-2.55%	28	0.0133	0.1487
10	-2.40%	55	0.0059	0.1546

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Question ID: 439360

The VAR measure for the fifth percentile using the historical simulation approach is closest to:

- A) -3.90%.
- B) -2.70%.
- C) -3.80%.
- D) -3.10%.

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Question ID: 439361

The VAR measure for the fifth percentile using the hybrid approach is closest to:

- A) -3.80%.
- B) -3.82%.
- C) -4.10%.
- D) -3.10%.

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Question ID: 439301

A portfolio manager determines that his portfolio has an expected return of \$20,000 and a standard deviation of \$45,000.

Given a 95 percent confidence level, what is the portfolio's VAR?

- A)** \$74,250.
 - B)** \$43,500.
 - C)** \$54,250.
 - D)** \$94,250.
-

Questions #31-32 of 66

Communities Bank has a \$17 million par position in a bond with the following characteristics:

- The bond is a 7-year, zero-coupon bond.
- The market value is \$12,358,674.
- The bond is trading at a yield to maturity of 4.6%.
- The historical mean change in daily yield is 0.0%.
- The standard deviation of the position is 1%.

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Question ID: 439344

The one-day VAR for this bond at the 95% confidence level is *closest* to:

- A)** \$105,257.
- B)** \$203,918.
- C)** \$339,487.
- D)** \$260,654.

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Question ID: 439345

The 10-day VAR on this bond is *closest* to:

- A)** \$644,845
 - B)** \$736,487.
 - C)** \$866,111.
 - D)** \$487,698.
-

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Question ID: 439300

Hugo Nelson is preparing a presentation on the attributes of value at risk. Which of Nelson's following statements is not correct?

- A)** VAR(1%) can be interpreted as the number of days that a loss in portfolio value will exceed 1%.
- B)** VAR can account for the diversified holdings of a financial institution, reducing capital requirements.
- C)** VAR(10%) = \$0 indicates a positive dollar return is likely to occur on 90 out of 100 days.
- D)** VAR was developed in order to more closely represent the economic capital necessary to ensure commercial bank solvency.
-

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Question ID: 439292

When comparing a fat-tailed distribution to an otherwise similar normal distribution, the fat-tailed distribution often has:

- A)** a lower probability mass at around one standard deviation.
- B)** a different mean and standard deviation.
- C)** a lower probability mass at more than three standard deviations.
- D)** an equal probability mass close to the mean.
-

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Question ID: 439322

A global portfolio is comprised of European and Emerging market equities. The correlation of returns for the two sectors is 0.3. Based on the information below, what is the portfolio's annual value at risk (VAR) at a 5 percent probability level?

Stock	Value	$E(R)$	σ
European	\$800,000	9.0%	15.0%
Emerging	\$200,000	18.0%	25.0%

- A)** \$130,300.
- B)** \$230,491.
- C)** \$128,280.
- D)** \$110,700.
-

Question #36 of 66

Question ID: 439356

Which of the following approaches is the *most* restrictive regarding the underlying assumption of the asset return distribution?

- A)** nonparametric.
 - B)** parametric.
 - C)** hybrid.
 - D)** multivariate density estimation.
-

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Question ID: 439339

For a \$1,000,000 stock portfolio with an expected return of 12 percent and an annual standard deviation of 15 percent, what is the VAR with 95 percent confidence level?

- A)** \$150,000.
 - B)** \$127,500.
 - C)** \$120,000.
 - D)** \$247,500.
-

Question #38 of 66

Question ID: 439303

Which of the common methods of computing value at risk relies on the assumption of normality?

- A)** Historical.
 - B)** Variance/covariance.
 - C)** Monte Carlo simulation.
 - D)** Rounding estimation.
-

Question #39 of 66

Question ID: 439350

Which of the following is (are) an advantage(s) of nonparametric methods compared to parametric methods for quantifying volatility?

- I. Nonparametric models require assumptions regarding the entire distribution of returns.
- II. Data is used more efficiently with nonparametric methods than parametric methods.
- III. Fat tails, skewness and other deviations from some assumed distribution are no longer a concern in the estimation process for nonparametric methods.
- IV. Multivariate density estimation (MDE) allows for weights to vary based on how relevant the data is to the current market environment by weighting the most recent data more heavily.

- A)** III and IV.
- B)** I and III.

C) I and II.

D) III only.

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Question ID: 656216

Consider the following EWMA models that are used to estimate daily return volatility. Which model's volatility estimates will have the most day-to-day volatility, and which model will be the slowest to respond to new data, respectively?

Model 1: $\sigma_n^2 = 0.04\mu_{n-1}^2 + 0.96\sigma_{n-1}^2$

Model 2: $\sigma_n^2 = 0.02\mu_{n-1}^2 + 0.98\sigma_{n-1}^2$

Model 3: $\sigma_n^2 = 0.20\mu_{n-1}^2 + 0.80\sigma_{n-1}^2$

Model 4: $\sigma_n^2 = 0.10\mu_{n-1}^2 + 0.90\sigma_{n-1}^2$

<u>Greatest day-to-day volatility</u>	<u>Slowest to respond to new data</u>
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A) Model 2 Model 3

B) Model 1 Model 4

C) Model 2 Model 2

D) Model 3 Model 2

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Question ID: 439319

Which of the following statements about value at risk (VAR) is **TRUE**?

A) VAR is not dependent on the choice of holding period.

B) VAR is independent of probability level.

C) VAR decreases with longer holding periods.

D) VAR decreases with lower confidence level.

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Question ID: 439321

Derivation Inc. has a portfolio of \$100 MM. The expected return over one year is 6 percent, with a standard deviation of 8 percent. What is the VAR for this portfolio at the 99 percent confidence level?

- A)** \$2.0 MM.
 - B)** \$12.6 MM.
 - C)** \$7.2 MM.
 - D)** \$12.1 MM.
-

Question #43 of 66

Question ID: 439291

Which of the following deviations from normality always leads to underestimating the distribution variance?

- I. Higher probability of high returns.
 - II. Higher probability of mean returns.
 - III. The mean of the distribution is conditional on the economic environment.
 - IV. The variance of the distribution is conditional on the economic environment.
- A)** I, II, and IV only.
B) III only.
C) II only.
D) III and IV only.
-

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Question ID: 439327

A portfolio manager is constructing a portfolio of stocks and corporate bonds. The portfolio manager has estimated that stocks and corporate bond returns have daily standard deviations of 1.8% and 1.1%, respectively, and estimates a correlation coefficient of returns of 0.43. If the portfolio manager plans to allocate 35% of the portfolio to corporate bonds and the rest to stocks, what is the daily portfolio VAR (2.5%) on a percentage basis?

- A)** 3.05%.
 - B)** 2.71%.
 - C)** 2.57%.
 - D)** 2.27%.
-

Question #45 of 66

Question ID: 439305

Which of the following statements comparing Monte Carlo VaR and historical VaR is *most accurate*?

- A)** Both are parametric approaches, but Monte Carlo VaR uses fewer inputs into the model than historical VaR.

- B)** Both compute VaR from percentiles from a given set of observed returns, but Monte Carlo VaR uses realized returns and historical VaR uses hypothetical returns.
- C)** Both compute VaR from percentiles from a given set of observed returns, but historical VaR uses realized returns and Monte Carlo VaR uses hypothetical returns.
- D)** Both are parametric approaches, but historical VaR uses a regression on past data while Monte Carlo VaR uses Kalman filtering to create forward looking VaR estimates.
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Question ID: 439358

Using both RiskMetrics and historical standard deviation, calculate the K-value that equates the most recent weight between the two models. Assume λ is 0.98.

- A)** $K = 98$.
- B)** $K = 51$.
- C)** $K = 50$.
- D)** $K = 30$.
-

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Question ID: 439337

Annual volatility: $\sigma = 20.0\%$						
Annual risk-free rate = 6.0%						
Exercise price (X) = 24						
Time to maturity = 3 months						
Stock price, S	\$21.00	\$22.00	\$23.00	\$24.00	\$24.75	\$25.00
Value of call, C	\$0.13	\$0.32	\$0.64	\$1.14	\$1.62	\$1.80
% Decrease in S	-16.00%	-12.00%	-8.00%	-4.00%	-1.00%	
% Decrease in C	-92.83%	-82.48%	-64.15%	-36.56%	-9.91%	
Delta ($\Delta C\% / \Delta S\%$)	5.80	6.87	8.02	9.14	9.91	

Alton Richard is a risk manager for a financial services conglomerate. Richard generally calculates the VAR of the company's equity portfolio on a daily basis, but has been asked to estimate the VAR on a weekly basis assuming five trading days in a week. If the equity portfolio has a daily standard deviation of returns equal to 0.65% and the portfolio value is \$2 million, the weekly dollar VAR (5%) is closest to:

- A)** \$29,100.

- B)** \$47,964.
 - C)** \$107,250.
 - D)** \$21,450.
-

Question #48 of 66

Question ID: 439308

The VaR measure obtained from simulating data based on assumptions concerning the return distributions is called:

- A)** Kurtotic VaR.
 - B)** Monte Carlo VaR.
 - C)** Prospective VaR.
 - D)** Stochastic VaR.
-

Question #49 of 66

Question ID: 439306

Which of the following statements about value at risk (VAR) is **TRUE**?

- A)** VAR is independent of probability level.
 - B)** VAR increases with lower significance levels.
 - C)** VAR is not dependent on the choice of holding period.
 - D)** VAR decreases with longer holding periods.
-

Question #50 of 66

Question ID: 439324

Alto Steel's pension plan has \$250 million in assets with an expected return of 12 percent. The last thirty monthly returns are given below.

What is the 10 percent monthly probability VAR for Alto's pension plan?

21.84%	-21.50%	31.76%	8.88%	2.54%	17.44%
6.97%	10.00%	2.71%	35.66%	31.07%	18.56%
9.82%	-7.94%	-0.78%	12.57%	11.77%	8.47%
2.99%	14.35%	14.20%	9.81%	11.03%	22.25%
9.68%	19.55%	8.53%	39.45%	36.15%	10.97%

- A)** \$1,950,000.
- B)** \$36,125,850.
- C)** \$3,000,000.

D) \$1,200,000.

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Question ID: 439332

Which of the following statements *most* accurately describes the pitfalls of VAR estimation methods?

- I. The Monte Carlo simulation method is subject to model risk.
- II. The historical simulation method is subject to time-variation risk.
- III. The delta-normal method will underestimate the VAR for fat-tailed distributions.

A) I, II and III.

B) I only.

C) I and II.

D) II and III.

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Question ID: 439355

The historical standard deviation approach differs from the RiskMetrics™ and GARCH approaches for estimating conditional volatility, because it:

- A) is a parametric method.**
 - B) places a lower weight on more recent data.**
 - C) applies a set of weights to past squared returns.**
 - D) uses recent historical data.**
-

Question #53 of 66

Question ID: 439334

If the one-day value at risk (VaR) of a portfolio is \$50,000 at a 95% probability level, this means that we should expect that in one day out of:

- A) 95 days, the portfolio will lose \$50,000.**
 - B) 20 days, the portfolio will decline by \$50,000 or less.**
 - C) 95 days, the portfolio will increase by \$50,000 or more.**
 - D) 20 days, the portfolio will decline by \$50,000 or more.**
-

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Question ID: 439296

A regime-switching volatility model of interest rates would assume all of the following **EXCEPT**:

- A)** the unconditional distribution of interest rates is normally distributed.
 - B)** interest rates are conditionally normally distributed.
 - C)** the regime determines whether the volatility of interest rates is high or low.
 - D)** the mean is constant.
-

Question #55 of 66

Question ID: 895768

An insurance company currently has a security portfolio with a market value of \$243 million. The daily returns on the company's portfolio are normally distributed with a standard deviation of 1.4%. Using the table below, determine which of the following statements are **TRUE**.

	Z_{critical}	
<i>Alpha</i>	<i>One-tailed</i>	<i>Two-tailed</i>
10%	1.28	1.65
2%	2.06	2.32

- I. One-day VAR(1%) for the portfolio on a percentage basis is equal to 3.25%.
- II. One-day VAR(10%) for the portfolio on a dollar basis is equal to \$5.61 million.
- III. |One-day VAR(6%)| > |one-day VAR(10%)|.

- A)** II and III only.
 - B)** I and III only.
 - C)** I only.
 - D)** I, II, and III.
-

Question #56 of 66

Question ID: 439312

Tim Jones is evaluating two mutual funds for an investment of \$100,000. Mutual fund A has \$20,000,000 in assets, an annual expected return of 14 percent, and an annual standard deviation of 19 percent. Mutual fund B has \$8,000,000 in assets, an annual expected return of 12 percent, and an annual standard deviation of 16.5 percent. What is the daily value at risk (VAR) of Jones' portfolio at a 5 percent probability if he invests his money in mutual fund A?

- A)** \$1,924.
 - B)** \$13,344.
 - C)** \$38,480.
 - D)** \$1,668.
-

Question #57 of 66

Question ID: 439310

A hedge fund portfolio has an expected return of 0.1 percent per day and a 5 percent probability 1-day value at risk (VAR) of \$909. Which of the following statement is the *best* descriptor of this information?

- A)** The maximum daily loss on the portfolio is \$909.
 - B)** The minimum daily loss on the portfolio is \$909.
 - C)** The minimum loss for the worst 5% of the days is \$909.
 - D)** The portfolio will earn more than \$909 only 5% of the time.
-

Question #58 of 66

Question ID: 439325

The price value of a basis point (PVBP) of a bond portfolio is \$45,000. Expected changes in interest rates over the next year are summarized below:

<i>Change in Interest rates</i>	<i>Probability</i>
>+1.50%	1%
+1.00-1.49%	29%
0.00-0.99%	20%
-0.99-0.00%	45%
<-1.00%	5%

What is the value at risk (VAR) for the bond portfolio at a 99 percent confidence level?

- A)** \$7,850,500.
 - B)** \$6,750,000.
 - C)** \$2,250,000.
 - D)** \$4,500,000.
-

Question #59 of 66

Question ID: 439294

Which of the following statements regarding fat-tail distributions is (are) TRUE?

A fat-tailed distribution:

- I. most likely results from time-varying volatility for the unconditional distribution.
- II. has a lower probability mass around one standard deviation from the mean than a normal distribution.
- III. has a lower probability mass around the mean than a normal distribution.
- IV. most likely results from time-varying means for the conditional distribution.

A) I and II.

B) I and III.

C) I only.

D) II and IV.

Question #60 of 66

Question ID: 439333

Value at risk (VAR) is a benchmark associated with a given probability. The actual loss:

- A)** may be much greater.
 - B)** will have an inverse relationship with VAR.
 - C)** cannot exceed this amount.
 - D)** is expected to be the average of the expected return of the portfolio and VAR.
-

Question #61 of 66

Question ID: 439329

The difference between a Monte Carlo simulation and a historical simulation is that a historical simulation uses randomly selected variables from past distributions, while a Monte Carlo simulation:

- A)** uses variables based on roulette odds.
 - B)** uses a computer to generate random variables.
 - C)** projects variables based on *a priori* principles.
 - D)** uses randomly selected variables from future distributions.
-

Question #62 of 66

Question ID: 439336

An investor has 60 percent of his \$500,000 portfolio in Value fund and the remaining in Growth fund. The correlation of returns of the two funds is -0.20. Based on the information below, what is the portfolio's VAR at a 5 percent probability level?

Fund	$E(R)$	σ
------	--------	----------

Value	12%	14.0%
Growth	16%	20.0%

- A) \$26,768.
 B) \$17,635.
 C) \$82,368.
 D) \$49,824.
-

Question #63 of 66

Question ID: 439295

All of the following are examples of why returns distributions can deviate from the normal distribution **EXCEPT** the distributions:

- A) are fat tailed.
 B) have unstable parameters.
 C) are symmetrical.
 D) are skewed.
-

Question #64 of 66

Question ID: 439357

How many of the following statements about VAR methodologies is (are) TRUE?

- I. The parametric approach is typically defined by the calculation of the distribution mean and variance.
- II. The nonparametric approach has the advantage of no required asset distribution.
- III. The implied-volatility based approach estimates volatility using current market prices.
- IV. The GARCH approach is a parametric model that uses time varying weights on historic returns to calculate distribution parameters.

- A) One statement is true.
 B) Three statements are true.
 C) All statements are true.
 D) Two statements are true.
-

Question #65 of 66

Question ID: 439335

Portfolio A has total assets of \$14 million and an expected return of 12.50 percent. Historical VAR of the portfolio at 5

percent probability level is \$2,400,000. What is the portfolio's standard deviation?

- A)** 17.97%.
 - B)** 14.65%.
 - C)** 12.50%.
 - D)** 15.75%.
-

Question #66 of 66

Question ID: 439314

A \$2 million balanced portfolio is comprised of 40 percent stocks and 60 percent intermediate bonds. For the next year, the expected return on the stock component is 9 percent and the expected return on the bond component is 6 percent. The standard deviation of the stock component is 18 percent and the standard deviation of the bond component is 8 percent. What is the annual VAR for the portfolio at a 1 percent probability level if the correlation between the stock and the bond component is 0.25?

- A)** \$126,768.
- B)** \$149,500.
- C)** \$303,360.
- D)** \$152,250.

Topic 53: Putting VaR to Work

Question #1 of 12

Question ID: 439365

Consider a portfolio of derivatives on fixed income securities and interest rates. If a Taylor Series approximation is used to estimate the delta normal value at risk for the individual derivatives in the portfolio, which of the following positions will have a substantially improved estimate of value at risk?

- I. Interest rate cap on 3-month LIBOR
- II. Forward rate agreement on 6-month LIBOR
- III. 6-month call option on Treasury bonds

- A)** I and II.
B) III only.
C) I and III.
D) II only.
-

Question #2 of 12

Question ID: 439368

Which of the following statements regarding the structured Monte Carlo approach is CORRECT?

- I. The general equation assumes the underlying asset has normally distributed returns with a mean of μ and a standard deviation of σ .
- II. The structured Monte Carlo (SMC) approach can address multiple assets with multiple risk exposures by generating correlated scenarios based on a statistical distribution.
- III. In some cases where it does not produce an accurate forecast of future volatility, increasing the number of simulations can improve the forecast.

- A)** I and II.
B) I, II and III.
C) II and III.
D) I and III.
-

Question #3 of 12

Question ID: 439369

An analyst at Burns Holdings, Inc. is considering using simulation analysis to calculate the VAR of the firm's assets. The analyst has read the following comments from a colleague about the structured Monte Carlo (SMC) approach. Which of the statements regarding the SMC approach are true?

- I. An advantage to the SMC approach is that inaccurate future volatility forecast can be improved by running more

- simulations.
- II. SMC approach cannot predict extreme values from correlation breakdowns if the underlying covariance matrix relies on normal market volatility.
- III. A disadvantage of the SMC approach is that it can only be used to estimate VAR for portfolios with long only positions.
- IV. SMC estimates the underlying asset prices and returns through the following stochastic process: $s_{t+1,i} = s_t e^{\mu + \sigma \times z}$
- V. An advantage to the SMC approach is that multiple risk factors can be incorporated into VAR estimate by incorporating correlation estimates.

- A)** II and IV.
- B)** I, II, III, and V.
- C)** II, IV, and V.
- D)** I, III, and V.
-

Question #4 of 12

Question ID: 439367

Consider the delta-normal and full-revaluation approaches to estimating the VAR of non-linear derivative instruments. Which of the following is **NOT** a requirement for either the delta-normal or full-revaluation approach?

- A)** The VAR(1%) of the asset underlying the derivative is based on an assumed normal distribution.
- B)** A second order adjustment is made to the underlying asset VAR(1%) to account for the non-linear relationship between the derivative and the underlying asset.
- C)** The VAR(1%) of the derivative is calculated by revaluing the derivative at the price corresponding to a VAR(1%) decline in the value of the underlying asset.
- D)** The VAR(1%) of the underlying asset is adjusted by a factor reflecting the price sensitivity of the derivative price to changes in the underlying asset price.
-

Question #5 of 12

Question ID: 656217

Annual volatility: $\sigma = 20.0\%$						
Annual risk-free rate = 6.0%						
Exercise price (X) = 24						
Time to maturity = 3 months						
Stock price, S	\$21.00	\$22.00	\$23.00	\$24.00	\$24.75	\$25.00
Value of call, C	\$0.13	\$0.32	\$0.64	\$1.14	\$1.62	\$1.80

% Decrease in S	-16.00%	-12.00%	-8.00%	-4.00%	-1.00%	
% Decrease in C	-92.83%	-82.48%	-64.15%	-36.56%	-9.91%	
Delta ($\Delta C\% / \Delta S\%$)	5.80	6.87	8.02	9.14	9.91	

Suppose that the stock price is currently at \$25.00 and the 3-month call option with an exercise price of \$24.00 is \$1.80. Using the linear derivative VAR method and the information in the above table, what is a 5% VAR for the call option's weekly return?

- A)** 43.4%.
 - B)** 50.7%.
 - C)** 21.6%.
 - D)** 45.3%.
-

Question #6 of 12

Question ID: 439364

An analyst at Bergman International Bank has been asked to explain the calculation of VAR for linear derivatives to the newly hired junior analysts. Which of the following statements *best* describes the calculation of VAR for a linear derivative on the S&P 500 Index?

- A)** For a futures contract, multiply the VAR of the S&P 500 Index by a sensitivity factor reflecting the percent change in the value futures contract for a one percent change in the index value.
 - B)** For an options contract, multiply the VAR of the S&P 500 Index by a sensitivity factor reflecting the percent change in the value futures contract for a one percent change in the index value.
 - C)** For a futures contract, divide the VAR of the S&P 500 Index by a sensitivity factor reflecting the absolute change in the value futures contract per absolute change in the index value.
 - D)** For an options contract, divide the VAR of the S&P 500 Index by a sensitivity factor reflecting the percent change in the value futures contract for a one percent change in the index value.
-

Question #7 of 12

Question ID: 439371

Which of the following stress testing approaches have the disadvantage of historical data limitations?

- I. Use of historical events approach.
- II. Historical simulation approach.
- III. Stress scenarios approach.

- A)** II only.

- B)** I and II.
C) I, II and III.
D) I only.
-

Question #8 of 12

Question ID: 439366

In which of the following cases will the Taylor Series be a *least likely* approximation? When the underlying asset is a:

- I. polynomial of order three or more.
- II. callable bond.
- III. mortgage-backed security (MBS).
- IV. twenty-year treasury.

- A)** I, II and III.
B) I, II, III and IV.
C) I and II.
D) II, III and IV.
-

Question #9 of 12

Question ID: 439372

Which of the following statements *most* accurately describe an appropriate step in the structured Monte Carlo (SMC) approach for measuring risk?

- I. Simulate thousands of valuation outcomes for the underlying assets.
 - II. Measure the value-at-risk (VAR) for the portfolio of derivatives based on the simulated outcomes.
- A)** II only.
B) Neither I nor II.
C) I only.
D) Both I and II.
-

Question #10 of 12

Question ID: 439370

Consider the primary methods of assessing the risk of a portfolio position through stress testing. Which of the following does not accurately describe an advantage or disadvantage related to a stress testing method?

- A)** An advantage to the stress scenario analysis method is that it accounts for asset-class-specific risk factors.

- B)** An advantage of the historical crisis approach is that it requires no assumptions regarding the underlying distribution of portfolio returns.
- C)** A disadvantage to the stress scenario analysis method is that it can produce misleading risk measures.
- D)** A disadvantage to the historical simulation approach is that it is limited to historical data which may be inappropriate in future periods.
-

Question #11 of 12

Question ID: 439363

Which of the following derivative instruments could be classified as linear or approximately linear?

- I. Swaption
- II. Forward on commodity
- III. Interest rate cap
- IV. Futures on equity index
- V. Currency swap

- A)** II, III, and IV.
- B)** II, IV, and V.
- C)** II and IV.
- D)** I and III.
-

Question #12 of 12

Question ID: 439373

A risk manager simulates the Worst Case Scenario (WCS) data in the following table using 10,000 random vectors for time horizons, H , of 50 and 100.

Time Horizon = H	$H = 50$	$H = 100$
Expected number of $Z < -2.33$	1.00	2.00
Expected number of $Z < -1.65$	2.00	6.00
Expected WCS	-2.02	-2.88
WCS 1 percentile	-3.55	-4.02
WCS 5 percentile	-2.43	-3.37

Which of the following statements is (are) CORRECT?

- I. The one percent value-at-risk (VAR) is -2.33.
- II. The one percent WCS for a holding period of 100 is -2.33.
- III. One percent VAR is expected to be exceeded twice over 100 trading periods.

- A)** I, II and III.

B) II only.

C) I and III.

D) I only.

Topic 54: Measures of Financial Risk

Question #1 of 12

Question ID: 439282

An investor is evaluating the following possible portfolios. Which of the following portfolios would *least likely* lie on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
A	26%	28%
B	23%	34%
C	14%	23%
D	18%	14%
E	11%	8%
F	18%	16%

- A)** A, B, and C.
 - B)** C, D, and E.
 - C)** B, C, and F.
 - D)** A, E, and F.
-

Question #2 of 12

Question ID: 439281

Adding a stock to a portfolio will reduce the risk of the portfolio if the correlation coefficient is *less than* which of the following?

- A)** 0.00.
 - B)** +1.00.
 - C)** +0.50.
 - D)** +0.30.
-

Question #3 of 12

Question ID: 439284

Which one of the following portfolios does not lie on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
A	7	5

B	9	12
C	11	10
D	15	15

- A) C.
B) B.
C) A.
D) D.
-

Question #4 of 12

Question ID: 439285

On a graph of risk, measured by standard deviation, and expected return, the *efficient frontier* represents:

- A) all portfolios plotted in the northeast quadrant that maximize return.
B) the set of portfolios that dominate all others as to risk and return.
C) the group of portfolios that have extreme values and therefore are "efficient" in their allocation.
D) all portfolios plotted to the left of the graph that maximize either risk or return.
-

Question #5 of 12

Question ID: 439289

Which of the following are properties of a Coherent risk metric?

- A) Sub-additivity.
B) All of these.
C) Monotonicity.
D) Positive homogeneous.
-

Question #6 of 12

Question ID: 439283

Which of the following portfolios falls below the Markowitz efficient frontier?

Portfolio	Expected Return	Expected Standard Deviation
A	12.1%	8.5%
B	14.2%	8.7%
C	15.1%	8.7%

D	16.2%	9.4%
---	-------	------

- A)** Portfolio C.
 - B)** Portfolio A.
 - C)** Portfolio B.
 - D)** Portfolio D.
-

Question #7 of 12

Question ID: 439287

A portfolio manager is concerned about the downside risk of his portfolios that contain financial products with option-like payoffs. The manager has been using the delta-normal VAR method to assess the portfolio's downside risk. Which of the following statements most accurately describes the characteristics of the delta-normal VAR method?

- I. Assumes a normal distribution.
 - II. Adjusts for non-normal distributions.
 - III. Adjusts for option-like payoffs.
 - IV. Adjusts for fat-tail distributions.
-
- A)** II and III.
 - B)** II, III, and IV.
 - C)** I only.
 - D)** I and II.
-

Question #8 of 12

Question ID: 439290

Which of the following is a property of a coherent risk metric?

- A)** Positive Heterogeneous.
 - B)** Sub-Monotonic.
 - C)** Sub-Additive.
 - D)** All of these.
-

Question #9 of 12

Question ID: 439280

There are benefits to diversification as long as:

- A)** the correlation coefficient between the assets is 1.
- B)** the correlation coefficient between the assets is less than 1.

- C)** there must be perfect negative correlation between the assets.
D) there is perfect positive correlation between the assets.
-

Question #10 of 12

Question ID: 439279

Stock A has a standard deviation of 0.5 and Stock B has a standard deviation of 0.3. Stock A and Stock B are perfectly positively correlated. According to Markowitz portfolio theory how much should be invested in each stock to minimize the portfolio's standard deviation?

- A)** 30% in Stock A and 70% in Stock B.
B) 100% in Stock A.
C) 100% in Stock B.
D) 50% in Stock A and 50% in Stock B.
-

Question #11 of 12

Question ID: 439286

Given a set of risky assets, a Markowitz efficient frontier:

- A)** consists of the portfolios that provide the lowest risk for every level of expected return.
B) can be calculated from the assets' expected returns and the correlations of returns for each pair of assets.
C) includes all portfolios that reduce the risk level compared to holding a single asset.
D) cannot be generated unless one of the assets has a beta of zero.
-

Question #12 of 12

Question ID: 439288

Which of the following is **NOT** a correct description of a coherent risk measure property?

- I. Homogeneity - the size of a portfolio will impact the size of its risk.
- II. Monotonicity - a portfolio with greater future returns will likely have less risk.
- III. Subadditivity - the risk of a portfolio is always more than the risk of the assets within the portfolio.
- IV. Translation invariance - the risk of a portfolio is independent of the assets within the portfolio.

- A)** I and II.
B) III and IV.
C) I and III.
D) II and III.

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Topic 55: Binomial Trees

Question #1 of 19

Question ID: 439394

The pricing results of the Black-Scholes-Merton model can be derived by:

- A) taking the limit as the periods in the binomial model become shorter.
 - B) solving a system of simple mathematical equations.
 - C) lengthening the periods in the binomial model.
 - D) using a regression model of prices on volatility.
-

Question #2 of 19

Question ID: 439391

Which of the following statements regarding the Black-Scholes-Merton option-pricing model is **TRUE**?

- A) The Black-Scholes-Merton model is superior to the binomial option-pricing model in its ability to price options on assets with periodic cash flows.
 - B) As the periods in the binomial option-pricing model are lengthened, it converges to the Black-Scholes-Merton option-pricing model.
 - C) The Black-Scholes-Merton option-pricing model is the discrete time equivalent of the binomial option-pricing model.
 - D) As the number of periods in the binomial options-pricing model is increased toward infinity, it converges to the Black-Scholes-Merton option-pricing model.
-

Question #3 of 19

Question ID: 439379

A stock is priced at 38 and the periodic risk-free rate of interest is 6 percent. What is the value of a two-period European put option with a strike price of 35 on a share of stock using a binomial model with an up factor of 1.15 and a risk-neutral probability of 68 percent?

- A) \$2.90.
 - B) \$0.64.
 - C) \$2.58.
 - D) \$0.57.
-

Question #4 of 19

Which of the following is a condition needed in order for the binomial tree to approach the Black-Scholes model?

- A)** Stock prices change in a discrete manner.
 - B)** Volatility changes stochastically over the life of the option.
 - C)** Interest rates change stochastically over the life of the option.
 - D)** The time intervals approach zero.
-

Question #5 of 19

A stock that is currently trading at \$30 can move up or down by 10 percent over a 6-month time period. The probability of the stock moving up in price in a 6-month period is 0.6074. The continuously compounded risk-free rate is 4.25 percent. The value of a 1-year American put option with an exercise price of \$32.50 is *closest* to:

- A)** \$3.42.
 - B)** \$5.50.
 - C)** \$2.75.
 - D)** \$2.49.
-

Question #6 of 19

Calculate the value of a one-year put option today for a stock that currently trades at \$40 and can either move to \$44 or \$36 at the end of a year. The continuously compounded risk-free rate is 3 percent and the put strike price is \$40. The put option's value is *closest* to:

- A)** \$2.36.
 - B)** \$2.02.
 - C)** \$1.35.
 - D)** \$2.70.
-

Question #7 of 19

A stock is priced at 40 and the periodic risk-free rate of interest is 8 percent. What is the value of a two-period European call option with a strike price of 37 on a share of stock using a binomial model with an up factor of 1.20 and a (risk-neutral) up probability of 67 percent?

- A)** \$20.60.
- B)** \$9.25.

C) \$3.57.

D) \$9.07.

Question #8 of 19

Question ID: 439374

The current price of Razor Manufacturing is \$20. In each of the next two years you expect the stock price to either move up 20 percent or down 20 percent. The probability of an upward move is 0.65 and the probability of a downward move is 0.35. The risk-free rate is 5 percent. The value of a 2-year American put option with strike price of \$24 is closest to:

A) \$3.85.

B) \$4.00.

C) \$3.65.

D) \$3.22.

Question #9 of 19

Question ID: 439377

A stock that currently trades at \$40 can either move up or down by 5 percent each year. The continuously compounded risk-free rate is 4 percent. An over-the-counter European call option with 2 years until expiration is set up so that the strike price is determined by the formula $\$40 + [(years\ to\ expiration + 1) \times 0.5]$ in periods when the stock price increases. In periods when the stock price declines, the strike price is \$40. What is the value of this 2-year specialized OTC call option?

A) \$2.56.

B) \$3.27.

C) \$3.12.

D) \$2.74.

Question #10 of 19

Question ID: 439392

As the binomial model of option prices is altered by increasing the number of periods:

A) the results stabilize at 30 periods.

B) option values increase.

C) volatility increases.

D) it eventually converges to the Black-Scholes-Merton option-pricing model.

Question #11 of 19

Question ID: 439382

A stock that is currently trading at \$50 and can either move to \$55 or \$45 over the next 6-month period. The continuously compounded risk-free rate is 2.25 percent. What is the risk-neutral probability of an up movement?

- A)** 0.6565.
 - B)** 0.5656.
 - C)** 0.5566.
 - D)** 0.6655.
-

Question #12 of 19

Question ID: 439380

A stock currently trades at \$50. At the end of three months, the stock will either be \$55 or \$45. The continuously compounded risk-free rate of interest is 5 percent per year. The value of a 3-month European call option with a strike price of \$50 is closest to:

- A)** \$2.55.
 - B)** \$2.89.
 - C)** \$2.78.
 - D)** \$2.25.
-

Questions #13-18 of 19

Al Bingly, CFA, is a derivatives specialist who attempts to identify and make short-term gains from trading mispriced options. One of the strategies that Bingly uses is to look for arbitrage opportunities in the market for European options. This strategy involves creating a synthetic call from other instruments at a cost less than the market value of the call itself, and then selling the call. During the course of his research, he observes that Hilland Corporation's stock is currently priced at \$56, while a European-style put option with a strike price of \$55 is trading at \$0.40 and a European-style call option with the same strike price is trading at \$2.50. Both options have 6 months remaining until expiration. The risk-free rate is currently 4 percent.

Bingly often uses the binomial model to estimate the fair price of an option. He then compares his estimated price to the market price. He observes that Dale Corporation's stock has a current market price of \$200, and he predicts that its price will either be \$166.67 or \$240 in one year. The risk-free rate is currently 4 percent. He also observes that the price of a one-year call with a \$220 strike price is \$11.11.

Bingly also uses the Black-Scholes-Merton model to price options. His stated rationale for using this model is that he believes the prices of the stocks he analyzes follow a lognormal distribution, and because the model allows for a varying risk-free rate over the life of the option. His plan is to use a statistical technique to estimate the volatility of a stock, enter it into the Black-Scholes-Merton model, and see if the associated price is higher or lower than the observed market price of the options on the stock.

Bingly wishes to apply the Black-Scholes-Merton model to both non-dividend paying and dividend paying stocks. He investigates how the presence of dividends will affect the estimated call and put price.

Question #13 of 19

Question ID: 439385

In the case of the options on Hilland Corporation's stock, if Bingly were to establish a long protective put position, he could:

- A) earn an arbitrage profit of \$0.30 per share by selling the call and lending \$57.20 at the risk-free rate.
- B) earn an arbitrage profit of \$0.03 per share by selling the call and borrowing the remaining funds needed for the position at the risk-free rate.
- C) not earn an arbitrage profit because the position is in equilibrium.
- D) not earn an arbitrage profit because he should short the protective put position.

Question #14 of 19

Question ID: 439386

The one-year call option on Dale Corporation:

- A) is underpriced.
- B) is overpriced.
- C) may be over or underpriced. The given information is not sufficient to give an answer.
- D) is fairly priced.

Question #15 of 19

Question ID: 439387

Bingly's sentiments towards the Black-Scholes-Merton (BSM) model regarding a lognormal distribution of prices and a variable risk-free rate are:

- A) correct for both reasons.
- B) incorrect for both reasons.
- C) correct concerning the distribution of stocks but incorrect concerning the risk-free rate.
- D) incorrect concerning the distribution of stocks but correct concerning the risk-free rate.

Question #16 of 19

Question ID: 439388

Which of the following is /least accurate regarding the limitations of the BSM model?

- A) The BSM is not useful in situations where the volatility of the underlying asset changes over time.
- B) The assumption of no taxes or transaction costs makes the BSM less useful.
- C) The BSM is not useful in pricing options on bonds and interest rates.
- D) The BSM is designed to price American options but not European options.

Question #17 of 19

Question ID: 439389

If Bingly forecasts the volatility for a stock and find that it is significantly greater than that implied by the prices of the puts and calls of the stock, he would conclude that:

- A)** the puts are overpriced and the calls are underpriced.
- B)** puts and calls are underpriced.
- C)** puts and calls are overpriced.
- D)** the puts are underpriced and the calls are overpriced.

Question #18 of 19

Question ID: 439390

All else being equal, the greater the dividend paid by a stock the:

- A)** higher the call price and the lower the put price.
 - B)** higher the call price and the higher the put price.
 - C)** lower the call price and the lower the put price.
 - D)** lower the call price and the higher the put price.
-

Question #19 of 19

Question ID: 439383

The current price of a non-dividend paying stock is \$75. The annual volatility of the stock is 18.25 percent, and the current continuously compounded risk-free interest rate is 5 percent. A 3-year European call option exists that has a strike price of \$90. Assuming that the price of the stock will rise or fall by a proportional amount each year, and that the probability that the stock will rise in any one year is 60 percent, what is the value of the European call option?

- A)** \$3.24.
- B)** \$7.36.
- C)** \$22.16
- D)** \$12.91.

Topic 56: The Black-Scholes-Merton Model

Question #1 of 15

Question ID: 439409

The value of a put option will be higher if, all else equal, the:

- A) underlying asset has positive cash flows.
 - B) exercise price is lower.
 - C) underlying asset has less volatility.
 - D) stock price is higher.
-

Question #2 of 15

Question ID: 439404

Which of the following methods is **NOT** used for estimating volatility inputs for the Black-Scholes model?

- A) Models of changing volatility.
 - B) Using the most current historical data.
 - C) Using exponentially weighted historical data.
 - D) Using long term historical data.
-

Question #3 of 15

Question ID: 439408

Dividends on a stock can be incorporated into the valuation model of an option on the stock by:

- A) subtracting the future value of the dividend from the current stock price.
 - B) subtracting the present value of the dividend from the current stock price.
 - C) adding the present value of the dividend to the current stock price.
 - D) adding the future value of the dividend to the option value.
-

Question #4 of 15

Question ID: 439406

Which of the following is **TRUE** for an option's price? An option's price is:

- A) unaffected by changes in the underlying asset's volatility.
- B) an increasing function of the underlying asset's volatility.
- C) a decreasing function of the underlying asset's volatility.

- D)** a decreasing function of the underlying asset's volatility when it has a long time remaining until expiration and an increasing function of its volatility if the option is close to expiration.

Question #5 of 15

Question ID: 439403

If we use four of the inputs into the Black-Scholes-Merton option-pricing model and solve for the asset price volatility that will make the model price equal to the market price of the option, we have found the:

- A)** historical volatility.
 - B)** market volatility.
 - C)** implied volatility.
 - D)** option volatility.
-

Question #6 of 15

Question ID: 738650

Consider a 120-day call option at 28 on a stock selling at 30 with an annualized standard deviation of 0.20 when the continuously compounded risk-free rate is 7 percent. The value of the call is closest to: [round d1 and d2 rather than interpolate for N(.)]

$$C_T = [S_T \times N(d_1)] - [Xe^{-rT} N(d_2)]$$

where:

$$d_1 = [\ln(S_T / X) + (r + \sigma^2/2) T] / \sigma \sqrt{T}$$

$$d_2 = d_1 - \sigma \sqrt{T}$$

Figure 1: Cumulative Standard Normal Probability

	0.03	0.04	0.05	0.06
0.6	0.7357	0.7389	0.7422	0.7454
0.7	0.7673	0.7704	0.7734	0.7764
0.8	0.7967	0.7995	0.8023	0.8051

- A)** \$3.07.
- B)** \$3.12.
- C)** \$3.02.
- D)** \$3.33.

Question #7 of 15

Question ID: 439407

Compared to the value of a call option on a stock with no dividends, a call option on an identical stock expected to pay a dividend during the term of the option will have a:

- A) lower value in all cases.
 - B) lower value only if it is an American style option.
 - C) higher value only if it is an American style option.
 - D) higher value in all cases.
-

Question #8 of 15

Question ID: 439397

Which of the following is *least likely* one of the assumptions of the Black-Scholes-Merton option pricing model?

- A) The options are European style.
 - B) Changes in volatility are known and predictable.
 - C) There are no cash flows on the underlying asset.
 - D) The risk-free rate of interest is known and does not change over the term of the option.
-

Question #9 of 15

Question ID: 439395

Which of the following is **NOT** one of the assumptions of the Black-Scholes-Merton (BSM) option-pricing model?

- A) Any dividends are paid at a continuously compounded rate.
 - B) Options valued are European style.
 - C) There are no transaction costs.
 - D) There are no taxes.
-

Question #10 of 15

Question ID: 439400

The current price of a stock is \$55. A put option with a \$50 strike price that expires in 3 months is available. If $N(d_1) = 0.8133$, $N(d_2) = 0.7779$, the underlying stock exhibits an annual standard deviation of 25 percent, and current risk free rates are 3.25 percent, the Black-Scholes value of the put is *closest* to:

- A) \$1.25.
- B) \$5.00.
- C) \$0.75.

D) \$1.50.

Question #11 of 15

Question ID: 439399

Using the Black-Scholes model, compute the value of a European call option using the following inputs:

Underlying stock price: \$100

Exercise price: \$90

Risk-free interest rate: 5%

Volatility: 20%

Dividend yield: 0%

Time to expiration: one year

The Black-Scholes call option price is *closest* to:

- A) \$16.71.**
- B) \$15.33.**
- C) \$13.65.**
- D) \$17.99.**

Question #12 of 15

Question ID: 439401

Consider a 145-day put option at 30 on a stock selling at 27 with an annualized standard deviation of 0.30 when the continuously compounded risk-free rate is 4 percent. The value of the put option is *closest* to: [round d1 and d2 rather than interpolate for N(.)].

$$P_T = [Xe^{-r(T)} \times (1 - N(d_2))] - [S_T \times (1 - N(d_1))]$$

where:

$$d_1 = [\ln(S_t / X) + [r + \sigma^2/2](T)] / \sigma \sqrt{T-t}$$

$$d_2 = d_1 - \sigma \sqrt{T}$$

Cumulative Standard Normal Probability:

	0.06	0.07	0.08	0.09
0.3	0.6406	0.6443	0.6480	0.6517
0.4	0.6772	0.6808	0.6844	0.6879

0.5	0.7123	0.7157	0.7190	0.7224
-----	--------	--------	--------	--------

- A) \$4.07.
 B) \$3.97.
 C) \$3.64.
 D) \$3.32.
-

Question #13 of 15

Question ID: 439396

Which of the following is **NOT** one of the assumptions of the Black-Scholes-Merton option-pricing model?

- A) The volatility is known and remains constant over the term of the option.
 B) There are no cash flows over the term of the options.
 C) The yield curve for risk-free assets is fixed over the term of the option.
 D) There are no taxes and transactions costs are zero for options and arbitrage portfolios.
-

Question #14 of 15

Question ID: 439398

Using the Black-Scholes model compute the value of a European put option using the following inputs:

- Underlying stock price: \$90
- Exercise price: \$90
- Risk-free interest rate: 5%
- Volatility: 20%
- Dividend yield: 0%
- Time to expiration: one year

The Black-Scholes put option price is *closest* to:

- A) \$6.12.
 B) \$4.11.
 C) \$5.01.
 D) \$5.89.
-

Question #15 of 15

Question ID: 439405

The implied volatility of interest rates can be *best* computed using the market price of an

- A)** interest rate call option contract.
- B)** interest rate forward contract.
- C)** S&P 500 option contract.
- D)** interest rate futures contract.

Topic 57: The Greek Letters

Question #1 of 17

Question ID: 439424

Call and put option values are most sensitive to changes in the volatility of the underlying when:

- A) both puts and calls are deep out-of-the-money.
 - B) both calls and puts are at-the-money.
 - C) both calls and puts are deep in-the-money.
 - D) calls are deep out-of-the-money and puts are deep in-the-money.
-

Question #2 of 17

Question ID: 439422

When an option's gamma is higher:

- A) a delta hedge will be more effective.
 - B) a delta hedge will perform more poorly over time.
 - C) delta will be lower.
 - D) delta will be higher.
-

Question #3 of 17

Question ID: 439417

To create a delta-neutral portfolio, an investor who has written 5,000 call options that have deltas equal to 0.5 will be:

- A) short 2,500 shares in the underlying and be short 2,500 more options.
 - B) long 2,500 shares in the underlying.
 - C) long 2,500 shares in the underlying and short 2,500 more options.
 - D) short 2,500 shares in the underlying.
-

Question #4 of 17

Question ID: 439418

The deltas of puts and calls are *most* sensitive to changes in the underlying when:

- A) both calls and puts are at-the-money.
- B) both puts and calls are deep out-of-the-money.
- C) calls are deep out-of-the-money, but puts are deep in-the-money.

- D)** both calls and puts are deep in-the-money.
-

Question #5 of 17

Question ID: 439412

Which of the following is the *best* interpretation of delta for an option? Delta is the change in the option price for:

- A)** a change in the time until expiration of the option.
 - B)** an instantaneous change in interest rates.
 - C)** an instantaneous change in price of the underlying stock.
 - D)** an instantaneous change in the volatility of the underlying stock.
-

Question #6 of 17

Question ID: 439423

Gamma is the greatest when an option:

- A)** is at the money.
 - B)** is deep in the money.
 - C)** has a shorter maturity.
 - D)** is deep out of the money.
-

Question #7 of 17

Question ID: 439411

An option dealer is delta hedging a short call position on a stock. As the stock price increases, in order to maintain the hedge, the dealer would most likely have to:

- A)** buy more shares of the stock.
 - B)** sell some the shares of the stock.
 - C)** short T-bills.
 - D)** buy T-bills.
-

Question #8 of 17

Question ID: 439419

Which of the following is **FALSE**?

- I. The delta of forwards and futures is 1.
- II. Gamma is largest when options are at-the-money.
- III. Two problems using stop-loss trading on naked options are transaction costs and stock price uncertainty.

IV. For a delta-neutral portfolio, although opposite in sign, theta can serve as a proxy for gamma.

- A) II and IV only.
 - B) I and III only.
 - C) II only.
 - D) I only.
-

Question #9 of 17

Question ID: 439416

Ronald Franklin, CFA, has recently been promoted to junior portfolio manager for a large equity portfolio at Davidson-Sherman (DS), a large multinational investment-banking firm. He is specifically responsible for the development of a new investment strategy that DS wants all equity portfolio managers to implement. Upper management at DS has instructed its portfolio managers to begin overlaying option strategies on all equity portfolios. The relatively poor performance of many of their equity portfolios has been the main factor behind this decision. Prior to this new mandate, DS portfolio managers had been allowed to use options at their own discretion, and the results were somewhat inconsistent. Some portfolio managers were not comfortable with the most basic concepts of option valuation and their expected return profiles, and simply did not utilize options at all. Upper management of DS wants Franklin to develop an option strategy that would be applicable to all DS portfolios regardless of their underlying investment composition. Management views this new implementation of option strategies as an opportunity to either add value or reduce the risk of the portfolio.

Franklin gained experience with basic options strategies at his previous job. As an exercise, he decides to review the fundamentals of option valuation using a simple example. Franklin recognizes that the behavior of an option's value is dependent on many variables and decides to spend some time closely analyzing this behavior. His analysis has resulted in the information shown in Exhibits 1 and 2 for European style options.

Exhibit 1: Input for European Options	
Stock Price (S)	100
Strike Price (X)	100
Interest Rate (r)	0.07
Dividend Yield (q)	0.00
Time to Maturity (years) (t)	1.00
Volatility (Std. Dev.) (Sigma)	0.20
Black-Scholes Put Option Value	\$4.7809

Exhibit 2: European Option Sensitivities		
Sensitivity	Call	Put
Delta	0.6736	-0.3264
Gamma	0.0180	0.0180

Theta	-3.9797	2.5470
Vega	36.0527	36.0527
Rho	55.8230	-37.4164

Franklin wants to know if the option sensitivities shown in Exhibit 2 have minimum or maximum bounds. Which of the following are the minimum and maximum bounds, respectively, for the put option delta?

- A) -1 and 1.
 - B) -1 and 0.
 - C) -1 and no maximum bound.
 - D) There are no minimum or maximum bounds.
-

Questions #10-11 of 17

Ronald Franklin, CFA, has recently been promoted to junior portfolio manager for a large equity portfolio at Davidson-Sherman (DS), a large multinational investment-banking firm. He is specifically responsible for the development of a new investment strategy that DS wants all equity portfolio managers to implement. Upper management at DS has instructed its portfolio managers to begin overlaying option strategies on all equity portfolios. The relatively poor performance of many of their equity portfolios has been the main factor behind this decision. Prior to this new mandate, DS portfolio managers had been allowed to use options at their own discretion, and the results were somewhat inconsistent. Some portfolio managers were not comfortable with the most basic concepts of option valuation and their expected return profiles, and simply did not utilize options at all. Upper management of DS wants Franklin to develop an option strategy that would be applicable to all DS portfolios regardless of their underlying investment composition. Management views this new implementation of option strategies as an opportunity to either add value or reduce the risk of the portfolio.

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Exhibit 1: Input for European Options	
Stock Price (S)	100
Strike Price (X)	100
Interest Rate (r)	0.07
Dividend Yield (q)	0.00
Time to Maturity (years) (t)	1.00
Volatility (Std. Dev.) (Sigma)	0.20
Black-Scholes Put Option Value	\$4.7809

Exhibit 2: European Option Sensitivities		
Sensitivity	Call	Put
Delta	0.6736	-0.3264
Gamma	0.0180	0.0180
Theta	-3.9797	2.5470
Vega	36.0527	36.0527
Rho	55.8230	-37.4164

Question #10 of 17

Question ID: 439414

Which of the following is the best estimate of the change in the put option when the underlying equity increases by \$1?

- A) -\$3.61.
- B) -\$0.33.
- C) -\$0.37.
- D) \$0.67.

Question #11 of 17

Question ID: 439415

Franklin computes the rate of change in the European put option delta value, given a \$1 increase in the underlying equity. Using the information in Exhibits 1 and 2, which of the following is the closest to Franklin's answer?

- A) 0.6736.
- B) 36.0527.
- C) -0.3264.
- D) 0.0180.

Question #12 of 17

Question ID: 439410

As an option approaches expiration, the value of rho for a put option:

- A) decreases and tends toward zero.
- B) decreases and tends toward negative infinity.
- C) increases and tends toward zero.
- D) increases and tends toward infinity.

Question #13 of 17

Question ID: 439425

Gamma-neutral hedging:

- A) decreases sensitivity to small changes in asset prices.
 - B) decreases sensitivity to large changes in asset prices.
 - C) increases sensitivity to large changes in asset prices.
 - D) increases sensitivity to small changes in asset prices.
-

Question #14 of 17

Question ID: 439426

Which of the following is *least accurate* regarding a gamma hedge?

- A) Gamma hedges require less frequent rebalancing than delta hedges.
 - B) More frequent rebalancing of a gamma hedge should result in higher returns.
 - C) Gamma measures the change in delta.
 - D) The gamma increases with larger changes in the stock price.
-

Question #15 of 17

Question ID: 439420

Which of the following is the *best* approximation of the gamma of an option if its delta is equal to 0.6 when the price of the underlying security is 100 and 0.7 when the price of the underlying security is 110?

- A) 1.00.
 - B) 0.01.
 - C) 0.00.
 - D) 0.10.
-

Question #16 of 17

Question ID: 439421

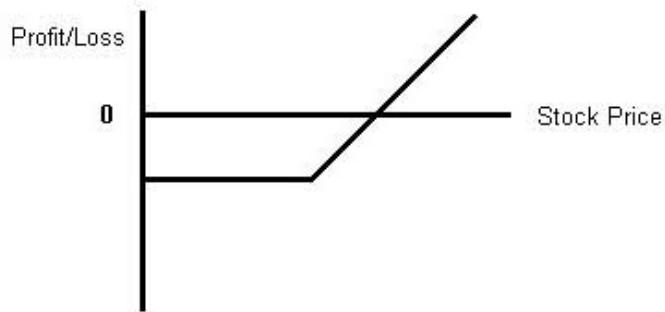
How is the gamma of an option defined? Gamma is the change in the:

- A) delta as the price of the underlying security changes.
- B) vega as the option price changes.
- C) theta as the option price changes.
- D) option price as the underlying security changes.

Question #17 of 17

Question ID: 439427

The following profit/loss diagram is for what type of position?



- A)** Short put.
- B)** Long put.
- C)** Long stock, short call (covered call).
- D)** Long stock, long put (portfolio insurance).

Topic 58: Prices, Discount Factors, and Arbitrage

Question #1 of 5

Question ID: 528931

Suppose that the discount factor for the first 180-day coupon period in Bond ABC is 0.91. What is the price of this bond if it pays \$105 six months from today?

- A) \$95.55.
 - B) \$54.97.
 - C) \$115.38.
 - D) \$14.00.
-

Question #2 of 5

Question ID: 424464

Which of the following statements about zero-coupon bonds is NOT correct?

- A) A zero coupon bond may sell at a premium to par when interest rates decline.
 - B) A zero-coupon bond provides a single cash flow at maturity equal to its par value.
 - C) The lower the price, the greater the return for a given maturity.
 - D) All interest is earned at maturity.
-

Question #3 of 5

Question ID: 439428

Which of the following statements regarding U.S. Treasury issues is least accurate?

- A) A 5-year Treasury note can be stripped into 11 different zero coupon securities.
 - B) Investment bankers strip the coupons from Treasury notes and bonds to create zero-coupon securities.
 - C) The U.S. Treasury issues zero coupon notes, but not bonds.
 - D) Due to the way Treasury STRIPS are taxed, U.S. investors may face negative cash flows before the maturity date.
-

Question #4 of 5

Question ID: 439429

Which of the following is most accurate in relation to P-STRIPS and shorter term C-STRIPS?

- A) P-STRIPS: Trade at fair value; C-STRIPS: Trade cheap.
- www.ombookcentre.in

- B)** P-STRIPS: Trade rich; C-STRIPS: Trade at fair value.
 - C)** P-STRIPS: Trade at fair value; C-STRIPS: Trade rich.
 - D)** P-STRIPS: Trade rich; C-STRIPS: Trade rich.
-

Question #5 of 5

Question ID: 738651

When trading Treasury STRIPS, which of the following statement is correct regarding the disadvantages of P-STRIPS and C-STRIPS?

- A)** Shorter-term C-STRIPS tend to trade cheap.
- B)** Longer-term C-STRIPS tend to trade rich.
- C)** STRIPS are liquid assets.
- D)** P-STRIPS typically trade at fair value.

Topic 59: Spot, Forward, and Par Rates

Question #1 of 17

Question ID: 439095

If 1-year rates are 5 percent, 1-year rates one year from now are expected to be 5.75 percent, and 1-year rates two years from now are expected to be 6.25 percent, then the unbiased expectations theory of interest rates would indicate current 3-year rates should be *closest* to:

- A) 6.37%.
 - B) 5.67%.
 - C) 8.75%.
 - D) 5.29%.
-

Question #2 of 17

Question ID: 439430

The Treasury spot rate yield curve is *closest* to which of the following curves?

- A) Forward yield curve rate.
 - B) Zero-coupon bond yield curve.
 - C) Reinvestment rate yield curve.
 - D) Par bond yield curve.
-

Question #3 of 17

Question ID: 440274

Risk management:

- A) exacerbates the need for a firm to hold a reserve of liquid assets.
 - B) has no impact on the expected costs of financial distress.
 - C) is a substitute for investing equity capital in liquid assets.
 - D) has no effect on the need for the firm to hold liquid assets.
-

Questions #4-5 of 17

Use this table for the following questions.

Maturity	STRIPS Price	Spot Rate	Forward Rate

(Years)			
0.5	98.7654	2.50%	2.50%
1.0	97.0662	3.00%	3.50%
1.5	95.2652	3.26%	3.78%
2.0	93.2775	????%	????%

Question #4 of 17

Question ID: 439446

The 6-month forward rate in 1.5 years (ending in year 2.0) is *closest* to:

- A) 4.11%.
- B) 4.26%.
- C) 4.57%.
- D) 4.04%.

Question #5 of 17

Question ID: 439447

The value of a 1.5-year, 6 percent semiannual coupon, \$100 par value bond is *closest* to:

- A) \$102.19.
- B) \$105.66.
- C) \$103.42.
- D) \$104.00.

Question #6 of 17

Question ID: 439431

Maturity (Years)	STRIP Price	Spot Rate	Forward Rate
0.5	98.7654	2.50%	2.50%
1.0	97.0662	3.00%	3.50%
1.5	95.2652	3.26%	3.78%
2.0	93.2775	?.??%	?.??%

The 2-year spot rate is *closest* to:

- A) 3.87%.
- B) 3.42%.

C) 4.02%.

D) 3.51%.

Questions #7-10 of 17

Use the following Treasury bond prices to answer the next four questions. Assume the prices are for settlement on June 1, 2005, today's date. Assume semiannual coupon payments:

Coupon	Maturity	Price
7.500%	12/1/2005	102-9
12.375%	6/1/2006	107-15
6.750%	12/1/2006	104-15
5.000%	6/1/2007	102-9+

Question #7 of 17

Question ID: 439437

The discount factors associated with the bonds maturing in December 2005 and June 2006, are *closest* to:

A) 0.9546/0.9696.

B) 0.9696/0.9858.

C) 0.9858/0.9546.

D) 0.9778/0.9696.

Question #8 of 17

Question ID: 439438

The spot rates associated with the discount factors determined in the previous question are *closest* to:

A) 1.82%/7.56%.

B) 3.26%/5.87%.

C) 2.25%/4.87%.

D) 2.88%/4.70%.

Question #9 of 17

Question ID: 439439

Given the spot rates for the 6-month and 1-year maturing bond, the 6-month forward rate 6 months from now is *closest* to:

- A)** 6.04%.
- B)** 7.28%.
- C)** 5.86%.
- D)** 6.54%.

Question #10 of 17

Question ID: 439440

The yield to maturity (YTM) for the bond maturing June 2007 is closest to:

- A)** 3.02%.
 - B)** 3.27%.
 - C)** 3.79%.
 - D)** 2.93%.
-

Question #11 of 17

Question ID: 439432

Assume the one-year spot rate is 4 percent, the two-year spot rate is 4.5 percent, and the three-year spot rate is 5 percent. Which of the following statements is **TRUE**?

- A)** The two-year rate that will exist one year from today is 5.5 percent.
 - B)** The one-year rate that will exist one year from today is 5.5 percent.
 - C)** The rate that an investor can earn on a sum invested today for the next three years is 5.5 percent.
 - D)** The one-year rate that will exist two years from today is 5 percent.
-

Question #12 of 17

Question ID: 439435

Which of the following statements concerning a forward rate is **FALSE**? A forward rate is:

- A)** the interest rate that makes an investor indifferent to investing over a long time period or investing over two or more shorter time periods.
 - B)** the market's best guess as to an interest rate that will exist in the future.
 - C)** an interest rate that can be locked in for some future time period.
 - D)** the rate of interest an investor would earn from now until some point in the future.
-

Question #13 of 17

Question ID: 439433

If the five-year spot rate is 6.1 percent and the four-year spot rate is 5.9 percent, what is the only rate that can be computed?

- A) The one-year forward rate starting four years from today is 6.9%.
 - B) The four-year forward rate starting one year from today is 7.4%.
 - C) The one-year forward rate starting four years from today is 7.4%.
 - D) The four-year forward rate starting one year from today is 6.9%.
-

Questions #14-16 of 17

Use the Treasury bond prices given below for the following four problems. Assume the prices are for settlement on June 1, 2005, today's date. Assume semiannual coupon payments:

Coupon	Maturity	Price
6.00%	12/1/2005	99-15
7.00%	6/1/2006	98-27+
8.00%	12/1/2006	101-29
9.00%	6/1/2007	102-9

Question #14 of 17

Question ID: 439442

The discount factors associated with the bonds maturing in December 2005 and June 2006, respectively, are closest to:

- A) 0.9458; 0.9013.
- B) 0.9657; 0.9225.
- C) 0.9319; 0.8769.
- D) 0.9587; 0.9157.

Question #15 of 17

Question ID: 439443

The spot rates associated with the discount factors of the previous problem are closest to:

- A) 5.48%; 6.78%.
- B) 7.10%; 8.23%.
- C) 6.26%; 7.05%.
- D) 4.87%; 6.23%.

Question #16 of 17

Question ID: 439444

Given the spot rates for the 6-month and 1-year maturing bond, the forward rate inherent in those figures is closest

to:

- A)** 4.68%.
 - B)** 5.74%.
 - C)** 9.37%.
 - D)** 6.96%.
-

Question #17 of 17

Question ID: 439434

If the one-year spot rate is 7 percent and the one-year forward rate is 7.4 percent, what is the two-year spot rate?

- A)** 7.20%.
- B)** 7.12 %.
- C)** 7.27%.
- D)** 7.40%.

Topic 60: Returns, Spreads and Yields

Question #1 of 16

Question ID: 439461

A 3-year, 8 percent semiannual coupon bond with \$100 par value currently yields 8.50 percent. What would be the price of the bond?

- A)** \$119.50.
 - B)** \$99.24.
 - C)** \$98.70.
 - D)** \$95.49.
-

Question #2 of 16

Question ID: 439456

A zero coupon bond with a face value of \$1,000 has a price of \$148. It matures in 20 years. Assuming annual compounding periods, the yield to maturity of the bond is:

- A)** 11.24%.
 - B)** 9.68%.
 - C)** 10.02%.
 - D)** 14.80%.
-

Question #3 of 16

Question ID: 439463

What is the semiannual-pay bond equivalent yield on an annual-pay bond with a yield to maturity of 12.51 percent?

- A)** 12.14%.
 - B)** 12.00%.
 - C)** 12.51%.
 - D)** 11.49%.
-

Question #4 of 16

Question ID: 439459

The price of a semiannual pay, \$1,000 face value bond with an 8 percent coupon rate with 10 years to maturity that currently yields 6.25 percent is closest to:

- A)** \$1,179.40.

- B)** \$1,000.00.
 - C)** \$1,128.69.
 - D)** \$1,092.38.
-

Question #5 of 16

Question ID: 439454

A bond with a 12% coupon, 10 years to maturity and selling at 88 has a yield to maturity of:

- A)** between 13% and 14%.
 - B)** between 12% and 13%.
 - C)** over 14%.
 - D)** between 10% and 12%.
-

Question #6 of 16

Question ID: 439457

A 20-year, 9 percent annual coupon bond selling for \$1,098.96 offers a yield of:

- A)** 10%.
 - B)** 11%.
 - C)** 8%.
 - D)** 9%.
-

Question #7 of 16

Question ID: 439449

An investor holds a 20-year, semi-annual 8.00 percent coupon Treasury bond issued at par. Market interest rates are currently at 6.50 percent. The bond is noncallable. A coupon payment is due this week. Which of the following choices *best* represents the type of risk the investor faces?

- A)** Prepayment risk.
 - B)** Reinvestment risk.
 - C)** Credit risk.
 - D)** Liquidity risk.
-

Question #8 of 16

Question ID: 439452

When planning to hold a coupon-paying Treasury bond until maturity, which of the following types of risk would be the *most important*?

- A)** Reinvestment.
 - B)** Downgrade.
 - C)** Interest rate.
 - D)** Default.
-

Question #9 of 16

Question ID: 439460

An investment pays \$75 annually into perpetuity and yields 5%. Which of the following is *closest* to the price?

- A)** \$750.
 - B)** \$1,000.
 - C)** \$1,500.
 - D)** \$375.
-

Question #10 of 16

Question ID: 439455

Which of the following statements concerning the yield-to-maturity on a bond is **CORRECT**? Yield to maturity (YTM) is:

- A)** below the current yield minus capital gain when the bond sells at a discount, and above the current yield plus capital loss when the bond sells at a premium.
 - B)** the discount rate that will set the present value of the payments equal to the bond price.
 - C)** always larger than current yield of the bond.
 - D)** based on the assumption that any payments received are reinvested at the current yield.
-

Question #11 of 16

Question ID: 439458

What is the yield to maturity (YTM) of a 20-year, U.S. zero-coupon bond selling for \$300?

- A)** 3.06%.
 - B)** 7.20%.
 - C)** 6.11%.
 - D)** 5.90%.
-

Question #12 of 16

Question ID: 439451

Which of the following statements relating to reinvestment risk for bonds is **TRUE**?

- A) Long-term bonds should be purchased if the investor anticipates higher reinvestment rates.
 - B) Unless the reinvestment rate equals the yield to maturity, the holding period return will be less than the yield to maturity.
 - C) If the investor anticipates lower reinvestment rates, high coupon bonds should be purchased.
 - D) Zero coupon bonds have no reinvestment risk over their term.
-

Question #13 of 16

Question ID: 439448

Which of the following statements about reinvestment risk is *least* accurate?

- A) Reinvestment risk is greater for amortizing securities.
 - B) A bond's yield calculation assumes that coupon cash flows and principal can be reinvested at the computed yield to maturity.
 - C) A bond investor can eliminate reinvestment risk by holding a coupon bond until maturity.
 - D) An investor concerned about reinvestment risk is most concerned with a decrease in interest rates.
-

Question #14 of 16

Question ID: 439450

The risk that an investor will earn less than the quoted yield-to-maturity on a fixed-coupon bond due to a decrease in interest rates is known as:

- A) prepayment risk.
 - B) event risk.
 - C) reinvestment risk.
 - D) liquidity risk.
-

Question #15 of 16

Question ID: 439462

A 16-year, 11 percent semiannual coupon bond with \$100 par value currently yields 8 percent. **Compute** the price of the bond.

- A) \$95.91.
- B) \$126.81.

C) \$129.50.

D) \$109.54.

Question #16 of 16

Question ID: 439453

Consider four bonds that are similar in all features except those shown. The bond with the greatest reinvestment risk is:

- A)** 15% coupon, callable.
- B)** 15% coupon, non-callable.
- C)** 5% coupon, non-callable.
- D)** 5% coupon, callable.

Topic 61: One-Factor Risk Metrics and Hedges

Question #1 of 56

Question ID: 439468

The price value of a basis point (PVBP) for a 7-year, 10 percent semiannual pay bond with a par value of \$1,000 and yield of 6 percent is closest to:

- A) \$0.92.
 - B) \$0.00.
 - C) \$0.64.
 - D) \$0.28.
-

Question #2 of 56

Question ID: 439504

Can a fixed income security have a negative convexity?

- A) Yes, but only when the price yield curve is linear.
 - B) Yes.
 - C) No.
 - D) Need more information to answer question.
-

Question #3 of 56

Question ID: 439494

How does the convexity of a bond influence the yield on the bond? All else the same, for a bond with high convexity investors will require:

- A) a higher yield.
 - B) the same yield as for a low convexity bond.
 - C) a higher or lower yield depending on the bond's duration.
 - D) a lower yield.
-

Question #4 of 56

Question ID: 439465

The price value of a basis point for a 7% coupon, semiannual pay, 10-year bond with a \$1,000 par value, currently trading at par, is closest to:

- A)** \$0.71.
 - B)** \$33.55.
 - C)** \$67.10.
 - D)** \$1.42.
-

Question #5 of 56

Question ID: 439499

Suppose you have a three-security portfolio containing bonds A, B and C. The effective portfolio duration is 5.9. The market values of bonds A, B and C are \$60, \$25 and \$80, respectively. The durations of bonds A and C are 4.2 and 6.2, respectively. Which of the following amounts is *closest* to the duration of bond B?

- A)** 9.0.
 - B)** 7.4.
 - C)** 7.1.
 - D)** 1.4.
-

Question #6 of 56

Question ID: 439505

How does the price-yield relationship for a putable bond compare to the same relationship for an option-free bond? The price-yield relationship is:

- A)** more convex for a putable bond than for an option-free bond.
 - B)** concave for an option-free bond and convex for a putable bond.
 - C)** the same for both bond types.
 - D)** more convex at some yields for the putable bond than for the option-free bond.
-

Question #7 of 56

Question ID: 439517

Jayce Arnold, a CFA candidate, is studying how the market yield environment affects bond prices. She considers a \$1,000 face value, option-free bond issued at par. Which of the following statements about the bond's dollar price behavior is *most likely* accurate when yields rise and fall by 200 basis points, respectively? Price will:

- A)** increase by \$124, price will decrease by \$149.
- B)** increase by \$149, price will decrease by \$124.
- C)** decrease by \$149, price will increase by \$124.
- D)** decrease by \$124, price will increase by \$149.

Question #8 of 56

Question ID: 439487

A major problem with the use of duration in interest rate risk management is that it assumes:

- A)** differential sensitivity of assets and liabilities to changes in interest rates.
 - B)** only a single change in interest rates over the planning horizon.
 - C)** a nonlinear relationship between prices and rates.
 - D)** an inverse relationship between prices and rates.
-

Question #9 of 56

Question ID: 439484

When compared to modified duration, effective duration:

- A)** is equal to modified duration for callable bonds but not putable bonds.
 - B)** factors in how embedded options will change expected cash flows.
 - C)** places less weight on recent changes in the bond's ratings.
 - D)** places more weight on recent changes in the bond's ratings.
-

Question #10 of 56

Question ID: 439509

Which of the following bonds bears the *greatest* price impact if its yield declines by one percent? A bond with:

- A)** 30-year maturity and selling at 70.
 - B)** 30-year maturity and selling at 100.
 - C)** 10-year maturity and selling at 70.
 - D)** 10-year maturity and selling at 100.
-

Question #11 of 56

Question ID: 439475

Which of the following statements about duration is **FALSE**?

- A)** Price volatility has a direct relationship with interest rate risk.
- B)** Effective duration is the exact change in price due to a 100 basis point change in rates.
- C)** For a specific bond, the effective duration formula results in a value of 8.80%. For a 50 basis point change in yield, the approximate change in price of the bond would be 4.40%.
- D)** The numerator of the effective duration formula assumes that market rates increase and decrease by the same number of basis points.
-

Question #12 of 56

Question ID: 439502

A bond portfolio consists of a AAA bond, a AA bond, and an A bond. The prices of the bonds are \$1,050, \$1,000, and \$950 respectively. The durations are 8, 6, and 4 respectively. What is the duration of the portfolio?

- A)** 18.20.
- B)** 6.67.
- C)** 6.07.
- D)** 6.00.
-

Question #13 of 56

Question ID: 439482

A 10-year, 11 percent annual coupon bond with \$100 par value currently yields 9 percent. What is the duration of the bond given a 50 basis point change in yield?

- A)** 4.80 years.
- B)** 6.19 years.
- C)** 7.27 years.
- D)** 6.95 years.
-

Questions #14-16 of 56

June Klein, CFA, manages a \$200 million (market value) U.S. government bond portfolio for a large institution. Klein anticipates a small, parallel shift in the yield curve of 10 basis points and wants to fully hedge the portfolio against any such change. Klein would like to use the T-bond futures contract to implement the hedge. She tabulates some essential information about her portfolio and the corresponding futures contract. The results are shown in Table 1.

Table 1: Portfolio and Treasury Bond Futures Contract Characteristics

Value of Portfolio:	\$100,000,000
Duration of Portfolio:	8.88438

Mar-00 Futures:	94.15625
Settlement Date:	02/17/00
Final Delivery Date:	03/31/00
First Delivery Date:	03/01/00

Klein is not as comfortable with the T-bond futures contract as she would like to be. Consequently, she decides to familiarize herself with the characteristics of the futures contract and its associated delivery process. She collects all of the deliverable bonds for the futures contract. This information is shown in Table 2. Klein will test her understanding using the highlighted bond in Table 2. The price value of a basis point (PVBP) are per \$1 million par value.

Table 2: Treasury Bonds Deliverable for T-Bond Futures Contract

Coupon	Maturity or first call date	Price (flat)	Accrued interest	YTM/YTC	PVBP \$ per million par	Duration	Conversion factor	Cost of delivery
10.000%	11/15/15	133 24/32	2.5824	6.534%	1211.2284		1.1759	23.0331

Klein's broker supplies the characteristics of the Treasury bond that is currently the cheapest-to-deliver bond. These are shown in Table 3.

Table 3: Cheapest-to-Deliver Treasury Bond

Coupon	Maturity or first call date	Price (flat)	Accrued interest	YTM/YTC	PVBP \$ per million par	Duration	Conversion factor	Cost of delivery
13.250%	11/15/17	135.4375	3.4217	9.166%	1110.0814	7.99429	1.4899	-4.8502

Question #14 of 56

Question ID: 439472

Klein wants to compute the interest rate sensitivity of the highlighted bond in Table 2. She assumes that the yield increases by one basis point. How much, per \$1 million par position, will the value of this bond change (to the nearest dollar)?

- A) -\$12.
- B) -\$121,123.
- C) \$121,123.
- D) -\$1,211.

Question #15 of 56

Question ID: 439473

Using the information in Table 2, Klein would like to compute the duration of the highlighted bond. Which is the closest to Klein's answer?

- A) 8.88.
- B) 10.54.
- C) 9.06.
- D) 12.11.

Question #16 of 56

Question ID: 439474

Klein would like to quantify the approximate value loss of her portfolio from an increase in yields according to her expectations. Using the information in Table 1 which of the following is the *closest* to Klein's answer?

- A) -\$1,211,228.
 - B) -\$888,438.
 - C) -\$8,884.
 - D) \$8,884.
-

Question #17 of 56

Question ID: 439479

Which of the following statements regarding duration is **FALSE**?

- A) Duration of a portfolio of bonds is equal to the market value weighted average of the duration of individual bonds in the portfolio.
 - B) Duration is unitless.
 - C) Duration is a measure of percentage change in price for a given change in yield.
 - D) Other things equal, duration of a coupon bond is higher when the bond's YTM is lower.
-

Question #18 of 56

Question ID: 439469

For a 20-year, \$1,000 par value, 6 percent coupon T-bond yielding 5 percent, the dollar value of a basis point (DV01) and associated percentage price change (PPC) are *closest* to:

- A) \$0.57 and 0.06%.
 - B) \$2.45 and 0.20%.
 - C) \$0.14 and 0.01%.
 - D) \$1.37 and 0.12%.
-

Question #19 of 56

Question ID: 439514

Negative convexity for a callable bond is *most likely* to be important when the:

- A) bond is first issued.
 - B) S&P or Moody's rating on the bond falls.
 - C) market interest rate rises above the bond's coupon rate.
 - D) price of the bond approaches the call price.
-

Question #20 of 56

Question ID: 439485

The goal of computing effective duration is to get a:

- A) preliminary estimate of Macaulay duration.
 - B) preliminary estimate of modified duration.
 - C) measure of duration that is effectively constant for the life of the bond.
 - D) more accurate measure of the bond's price sensitivity when embedded options exist.
-

Question #21 of 56

Question ID: 439519

Which of the following statements regarding convexity, barbell portfolios, and bullet portfolios is *least* accurate?

- I. The convexity of shorter-term coupon bonds is generally greater than the convexity of longer-term coupon bonds.
 - II. A barbell strategy will tend to have greater convexity than a bullet strategy.
 - III. Bullet and barbell strategies may have the same duration.
-
- A) III only.
 - B) I and II.
 - C) II and III.
 - D) I only.
-

Question #22 of 56

Question ID: 439500

Suppose you have a two-security portfolio containing bonds A and B. The book value of bond A is \$20 and the market value is \$35. The book value of bond B is \$40 and the market value is \$50. The duration of bond A is 4.7 and the duration of bond B is 5.9. Which of the following amounts is *closest* to the duration of the portfolio?

- A) 5.6.
- B) 5.4.
- C) 5.5.
- D) 5.3.

Question #23 of 56

Question ID: 439477

Duration of a bond can be defined as the:

- A) weighted-average maturity of a bond portfolio.
 - B) sensitivity of the value of the bond to a change in interest rates.
 - C) sensitivity of the value of the bond to a change in maturity.
 - D) sensitivity of the value of the bond to a change in the value of market portfolio.
-

Question #24 of 56

Question ID: 439480

A 12-year, 5 percent semiannual coupon bond with \$100 par value currently yields 8.00 percent. What is the duration of the bond given a 100 basis point increase and decrease in yield?

- A) 12.56.
 - B) 8.38.
 - C) 16.78.
 - D) 7.80.
-

Question #25 of 56

Question ID: 439521

Immunization is the process of offsetting the effects of interest-rate changes on the value of assets and liabilities. Coverage of liabilities with significant convexity may be more effectively matched with a:

- A) mortgage portfolio, especially in a highly volatile rate environment.
 - B) barbell portfolio with positive convexity.
 - C) bullet portfolio with little convexity.
 - D) callable bond portfolio, especially in a declining-rate environment.
-

Question #26 of 56

Question ID: 439481

A bond with an 8% semi-annual coupon and 10-year maturity is currently priced at \$904.52 to yield 9.5%. If the yield declines to 9%, the bond's price will increase to \$934.96, and if the yield increases to 10%, the bond's price will decrease to \$875.38. Estimate the percentage price change for a 100 basis point change in rates.

- A) 2.13%.
- B) 4.35%.

- C) 8.41%.
D) 6.58%.
-

Question #27 of 56

Question ID: 439515

Which of the following statements *best* describes the concept of negative convexity in bond prices? As interest rates:

- A) fall, the bond's price increases at an increasing rate.
B) rise, the bond's price approaches a minimum value.
C) fall, the bond's price increases at a decreasing rate.
D) rise, the bond's price decreases at a decreasing rate.
-

Question #28 of 56

Question ID: 439503

Negative convexity is *most likely* to be observed in:

- A) municipal bonds.
B) callable bonds.
C) zero coupon bonds.
D) treasury bonds.
-

Question #29 of 56

Question ID: 439486

When calculating duration, which of the following bonds would an investor *least likely* use effective duration on rather than modified duration?

- A) Option-free bond.
B) Convertible bond.
C) Callable bond.
D) Putable bond.
-

Question #30 of 56

Question ID: 439520

Evaluated at the same yield, the investment that is expected to have the greatest convexity is a:

- A) 6% coupon bond of 10-year duration.

- B) 10-year zero-coupon bond.
 - C) portfolio with a duration of 10 that contains a 5-year zero-coupon bond and a 15-year zero-coupon bond.
 - D) callable 6% coupon bond of 10-year duration.
-

Question #31 of 56

Question ID: 439501

Which of the following statements about portfolio duration is **FALSE**? It is:

- A) measured using market prices of the bonds.
 - B) the weighted average of the duration estimates of the securities in the portfolio.
 - C) a simple average of the duration estimates of the securities in the portfolio.
 - D) a measure of interest rate risk.
-

Question #32 of 56

Question ID: 439510

Consider two bonds, A and B. Both bonds are presently selling at par. Each pays interest of \$120 annually. Bond A will mature in 5 years while bond B will mature in 6 years. If the yields to maturity on the two bonds change from 12 percent to 10 percent, both bonds will:

- A) increase in value, but bond B will increase more than bond A.
 - B) increase in value, but bond A will increase more than bond B.
 - C) decrease in value, but bond A will decrease more than bond B.
 - D) decrease in value, but bond B will decrease more than bond A.
-

Question #33 of 56

Question ID: 439464

Interest rate risk is *most* commonly associated with:

- A) fixed income instruments.
 - B) futures market.
 - C) commodity market.
 - D) equity market.
-

Question #34 of 56

www.ombookcentre.in Question ID: 439495

Convexity is *more important* when rates are:

- A) low.
 - B) unstable.
 - C) depends on whether the note is selling at a premium or a discount.
 - D) high.
-

Question #35 of 56

Question ID: 439513

Non-callable bond prices go up faster than they go down. This is referred to as:

- A) embedded benefits.
 - B) negative convexity.
 - C) positive convexity.
 - D) inverse features.
-

Question #36 of 56

Question ID: 439478

A 12-year, 8 percent annual coupon bond with \$100 par value currently sells at par. The bond is callable at 102. What is the effective duration of the bond assuming interest rates change by 100 basis points?

- A) 5.85.
 - B) 10.50.
 - C) 4.58.
 - D) 7.55.
-

Question #37 of 56

Question ID: 439493

With respect to an option-free bond, when interest-rate changes are large, the duration measure will overestimate the:

- A) increase in a bond's price from a given increase in interest rates.
 - B) associated change in the bond's rating.
 - C) fall in a bond's price from a given increase in interest rates.
 - D) final bond price from a given increase in interest rates.
-

Question #38 of 56

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Question ID: 439516

Which of the following bonds may have *negative* convexity:

- A) High yield bonds.
 - B) All of these choices are correct.
 - C) Mortgage backed securities.
 - D) Callable bonds.
-

Question #39 of 56

Question ID: 439511

Convexity is important because:

- A) the slope of the price yield curve is not linear.
 - B) it measures the volatility of non-callable bonds.
 - C) it can be used to indicate the optimal hedge ratio.
 - D) the slope of the callable bond price/yield curve is backward bending at high interest rates.
-

Question #40 of 56

Question ID: 439506

How does the price-yield relationship for a callable bond compare to the same relationship for an option-free bond? The price-yield relationship is:

- A) concave for the callable bond and convex for an option-free bond.
 - B) concave for low yields for the callable bond and always convex for the option-free bond.
 - C) concave for an option-free bond and convex for a callable bond.
 - D) the same for both bond types.
-

Question #41 of 56

Question ID: 439470

The price value of a basis point (PVBP) for a 18 year, 8 percent annual pay bond with a par value of \$1,000 and yield of 9 percent is *closest* to:

- A) \$0.82.
 - B) \$0.63.
 - C) \$0.80.
 - D) \$0.44.
-

Which of the following statements describe a property of bond convexity? Convexity:

- I. increases as yields increase.
 - II. increases with the square of maturity.
 - III. measures the rate of change in duration.
 - IV. increases if the coupon on a bond is increased.
- A) III and IV only.
B) II and III only.
C) I and III only.
D) II and IV only.
-

Question #43 of 56

Question ID: 439483

The *most commonly* used measure of interest-rate risk is:

- A) coupon.
 - B) duration.
 - C) yield.
 - D) maturity.
-

Question #44 of 56

Question ID: 439507

Which of the following is *most* accurate about a bond with positive convexity?

- A) Price increases and decreases at a faster rate than the change in yield.
 - B) Price increases when yields drop are greater than price decreases when yields rise by the same amount.
 - C) Price changes are the same for both increases and decreases in yields.
 - D) Positive changes in yield lead to positive changes in price.
-

Question #45 of 56

Question ID: 439508

The convexity of a U.S Treasury bond is usually:

- A) additional information is required.
- B) zero.
- C) positive.

- D) negative.
-

Question #46 of 56

Question ID: 439492

For a given change in yields, the difference between the actual change in a bond's price and that predicted using the duration measure will be greater for:

- A) a bond with less convexity.
 - B) a bond with greater convexity.
 - C) inverse convexity.
 - D) a short-term bond.
-

Question #47 of 56

Question ID: 439467

The price value of a basis point (PVBP) of a bond is \$0.75. If the yield on the bond goes up by 1 bps, the price of the bond will:

- A) increase by \$0.75.
 - B) is less volatile than a bond with a PBVP of \$0.50.
 - C) decline by \$0.75.
 - D) increase or decrease by \$0.75.
-

Question #48 of 56

Question ID: 439498

If a 12-year, 8 percent annual coupon bond with \$100 par value is currently selling at par what is the convexity of the bond?

- A) 78.0.
 - B) 98.0.
 - C) 100.5.
 - D) 57.0.
-

Question #49 of 56

Question ID: 439496

Why is convexity a good thing for a bond holder? Because when compared to a low convexity bonds a high convexity bond:

- A) is more sensitive to interest rate changes, increasing the potential payoff.
 - B) has better price changes regardless of the direction of the yield change.
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- C) is usually underpriced.
 - D) has improved estimation of price changes.
-

Question #50 of 56

Question ID: 746112

Positive convexity in bond prices implies all but which of the following statements?

- A) As yields increase, changes in yield have a smaller effect on bond prices.
 - B) As yields decrease, changes in yield have a larger effect on bond prices.
 - C) The price volatility of non-callable bonds is inversely related to the level of market yields.
 - D) Bond prices approach a ceiling as interest rates fall.
-

Question #51 of 56

Question ID: 439466

For a given bond and yield, the dollar value of a one basis point change in yield is typically:

- A) greater for a yield increase.
 - B) equal for a yield increase and decrease.
 - C) greater for a yield decrease.
 - D) unrelated to the bonds convexity.
-

Questions #52-54 of 56

A 10-year maturity Treasury bond has a par value of \$10,000 and a 5 percent coupon. The yield on the bond is 4.5 percent. Assume that the yield can fall to 4.45 percent or rise to 4.55 percent.

Question #52 of 56

Question ID: 439489

The effective duration for the bond is closest to:

- A) 7.24.
- B) 7.86.
- C) 8.07.
- D) 7.61.

Question #53 of 56

Question ID: 439490

The effective convexity of the bond is closest to:

57.69.

- B) 38.46.
- C) 76.93.
- D) 19.23.

Question #54 of 56

Question ID: 439491

Given your answers to the two prior questions, the percentage price change associated with a 20-basis-point increase in yield is closest to a:

- A) decrease of 1.58%.
 - B) decrease of 1.54%.
 - C) decrease of 1.56%.
 - D) decrease of 1.60%.
-

Question #55 of 56

Question ID: 439518

Positive convexity means that:

- A) bond price sensitivity is lowest when market yields are low.
 - B) as interest rates change, bond prices will increase at an increasing rate and decrease at a decreasing rate.
 - C) the price of a fixed-coupon bond is inversely related to changes in interest rates.
 - D) the graph of a callable bond flattens out as the market value approaches the call price.
-

Question #56 of 56

Question ID: 439476

Vijay Ranjin, CFA, is a portfolio manager with Golson Investment Group. He manages a fixed-coupon bond portfolio with a face value of \$120.75 million and a current market value of \$116.46 million. Golson's economics department has forecast that interest rates are going to change by 50 basis points. Based on this forecast, Ranjin estimates that the portfolio's value will increase by \$2.12 million if interest rates fall and will decrease by \$2.07 million if interest rates rise. Which of the following choices is closest to the portfolio's effective duration?

- A) 4.3
- B) 3.6
- C) 0.4
- D) 2.9

A)

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Topic 62: Multi-Factor Risk Metrics and Hedges

Question #1 of 11

Question ID: 439522

Which of the following *best* describes key rate duration? Key rate duration is determined by:

- A) shifting the whole yield curve linearly.
 - B) shifting the whole yield curve in a parallel manner.
 - C) changing the yield of a specific maturity.
 - D) changing the curvature of the entire yield curve.
-

Question #2 of 11

Question ID: 439525

You are using key rate shifts to model the term structure of interest rates. For key rates you have chosen the 1-year, 7-year, and 20-year yields. The effect on the 10-year yield of a 10 basis point increase in the 7-year yield is *closest* to a:

- A) 2.3 basis points increase.
 - B) 10 basis point increase.
 - C) 7.7 basis point increase.
 - D) 5 basis points increase.
-

Question #3 of 11

Question ID: 439527

Assume you own a security with a 2 year key rate exposure of \$4.78, and you would like to hedge your position with a security that has a corresponding 2 year key rate exposure of 0.67 per \$100 of face value. What amount of face value would be used to hedge the 2 year exposure?

- A) \$713.
 - B) \$670.
 - C) \$478.
 - D) \$239.
-

Question #4 of 11

Question ID: 439524

Which of the following is NOT an accurate statement regarding the key rate shift approach in analyzing term structure?

shifts in the yield curve?

- A)** Key rate effects are smooth.
 - B)** A parallel shift across the yield curve results.
 - C)** A linear relationship incorporates key changes in rates across key rates.
 - D)** Key rates are mostly affected by the few rates closest to it.
-

Question #5 of 11

Question ID: 439529

Which of the following statements regarding key rate shifts and bucket shifts is CORRECT?

- I. The key rate shift approach uses many potential effects within a region of the yield curve.
 - II. The bucket shift approach assumes parallel changes in the forward rates implicit in the region of the curve being investigated.
 - III. The key rate shift approach is more appropriate than the bucket shift approach for managing the interest rate risk of a swaps portfolio.
- A)** II and III.
B) I only.
C) III only.
D) II only.
-

Question #6 of 11

Question ID: 439532

How are forward-bucket '01s computed?

- A)** By summing the changes in the fitted securities.
 - B)** By fitting the swap par rates to the yield curve.
 - C)** By shifting the forward rate over each of several defined regions of the term structure.
 - D)** By expanding key rates to an infinite number along the curve.
-

Question #7 of 11

Question ID: 439528

Which measure of interest rate risk would be *most* suitable for managing the interest rate risk of a swaps portfolio?

- A)** Key rate duration.
 - B)** Bucket shift technique.
 - C)** Key rate shift technique.
 - D)** Effective duration.
-

Question #8 of 11

Question ID: 439526

An analyst has a list of key rate durations for a portfolio of bonds. If only one interest rate on the yield curve changes, the effect on the value of the bond portfolio will be the change of that rate multiplied by the:

- A)** key rate duration associated with the maturity of the rate that changed.
 - B)** weighted average of the key rate durations.
 - C)** simple average of the key rate durations.
 - D)** median of the key rate durations.
-

Question #9 of 11

Question ID: 439531

Which of the following differences between key rate and bucket analysis is (are) CORRECT?

- I. Key rate uses more interest rate factors.
- II. The bucket shift approach assumes parallel changes in the implicit forward rates.
- III. Estimating portfolio volatility with both methods is similar except the bucket technique required less inputs and correlations.
- IV. The key rate shift approach assumes changes in rates in and around the chosen key rates.

- A)** II and IV.
 - B)** II and III.
 - C)** IV only.
 - D)** I and III.
-

Question #10 of 11

Question ID: 439530

Which of the following statements in regard to key rate shifts and bucket shift approaches is FALSE?

- A)** The bucket shift approach assumes non-parallel changes in forward rates in the section of the yield curve under investigation.
- B)** Key rate shifts assume changes in rates in and around the chosen key rates.
- C)** Key rate shifts incorporate a relatively small number of key rates in its analysis.

- D)** The bucket shift approach uses many potential effects within a section of the yield curve.
-

Question #11 of 11

Question ID: 439523

An analyst is using key rate shifts to model the term structure of interest rates. For key rates the analyst has chosen the 1-year, 7-year, and 20-year yields. The rate changes that will have an effect on a 5-year bond are:

- A)** 1-year and 7-year.
- B)** 1-year, 7-year, and 20-year.
- C)** 1-year.
- D)** 7-year.

Topic 63: Country Risk: Determinants, Measures and Implications

Question #1 of 5

Question ID: 642631

Regarding instances of sovereign default in foreign currency debt, which of the following statements is incorrect?

- A)** Over the last 200 years there have been many instances of default.
 - B)** Countries are more likely to default on funds borrowed from banks than on sovereign bond issues.
 - C)** A large proportion of sovereign defaults are foreign currency defaults.
 - D)** In dollar terms, Eastern Europe has accounted for the largest proportion of sovereign defaults in the last 50 years.
-

Question #2 of 5

Question ID: 642633

An investment analyst has been asked to contribute to a written report on country risk assessment. Specifically, he is required to research and report on the factors that influence the level of sovereign default risk. Which of the following statements should the analyst make in his report?

- A)** One must consider the amount the country owes its own citizens when evaluating default risk.
 - B)** Countries with greater pension commitments and health care commitments have lower default risk.
 - C)** The greater the tax receipts, the less able a country is to make debt payments.
 - D)** Countries with less diversified economies are more likely to have stable tax receipts.
-

Question #3 of 5

Question ID: 642630

When analyzing how a country's position in the economic growth life cycle, political risk, legal risk, and economic structure affect its risk exposure, which of the following statements is correct?

- A)** One component of political risk is continuous versus discontinuous risks.
- B)** Regarding economic growth life cycle, more mature companies are more risky than firms in the early stages of growth.
- C)** Regarding economic structure, a disproportionate reliance on a single commodity or service in an economy decreases a country's risk exposure.
- D)** Regarding legal risks, the protection of property rights do not affect default risk.

Question #4 of 5

Question ID: 642632

Regarding the consequences of sovereign default, which of the following statements is incorrect?

- A)** Gross domestic product (GDP) growth falls between 0.5% and 2.0% following a sovereign default and the decline is short-lived.
 - B)** Sovereign default can cause trade retaliation.
 - C)** Ratings of countries that have defaulted at least once since 1970 are one to two grades lower than the ratings of similar countries that have not defaulted.
 - D)** Sharp currency appreciations often follow defaults.
-

Question #5 of 5

Question ID: 642634

Which of the following statements most likely describes an advantage of using the sovereign default risk spread as a predictor of defaults?

- A)** An analyst can compare local currency bonds with each other when using default risk spreads.
- B)** Default risk spreads are not volatile, so changes in spreads are not affected by variables unrelated to the default risk of the sovereign.
- C)** As bonds trade and bond yields rise and fall, default risk spreads change, revealing information about the market's perception of risk.
- D)** When calculating a default risk spread, there is no need for a risk-free security in the currency in which the bonds are issued.

Topic 64: External and Internal Ratings

Question #1 of 16

Question ID: 439549

At-the-point approaches tend to be:

- A) countercyclical.
 - B) procyclical.
 - C) neither counter- nor procyclical because they change randomly.
 - D) neither counter- nor procyclical because they rarely change.
-

Question #2 of 16

Question ID: 439542

Which of the following statements *best* characterizes the change in a bond rating and the price of the firm's stock?

- A) A bond downgrade produces a downward movement in the stock price, and an upgrade produces little or no movement.
 - B) A bond downgrade produces an upward movement in the stock price, and an upgrade produces a downward movement.
 - C) Bond downgrades and upgrades are equally ambiguous in their effects.
 - D) A bond downgrade produces little or no movement in the stock price, and an upgrade produces an upward movement.
-

Question #3 of 16

Question ID: 439275

A credit rating of B1 is a rating given by:

- A) The Bank Credit Rating system.
 - B) Standard & Poors.
 - C) Fitch.
 - D) Moody's.
-

Question #4 of 16

Question ID: 439546

Internal ratings by banks tend to:

- A) be unrelated to the economic cycle.

- B)** lag behind the economic cycle.
 - C)** predict the economic cycle.
 - D)** coincide with the economic cycle.
-

Question #5 of 16

Question ID: 439543

Six months ago an investor purchased a bond that was rated BB. Today the bond is upgraded to a BBB rating. The *most likely* effect of this upgrade is:

- A)** increased call risk.
 - B)** an increase in yield to maturity.
 - C)** a higher spot price.
 - D)** increased liquidity risk.
-

Question #6 of 16

Question ID: 439541

Under the Moody's bond rating system, the threshold for non-investment grade debt is reached when a bond's rating falls from:

- A)** Ba to B.
 - B)** A to Baa.
 - C)** Baa to Ba.
 - D)** Caa to D.
-

Question #7 of 16

Question ID: 439545

Which of the following statements is **TRUE**?

- A)** Bond ratings are determined by the market.
 - B)** Default risk is important because if a bond issuer defaults, the bondholder likely loses his entire investment.
 - C)** When a rating agency downgrades a security, the bond's price usually falls.
 - D)** Technical default usually refers to the issuer's failure to make interest or principal payments as scheduled in the indenture.
-

Question #8 of 16

Question ID: 439544

The effect of ratings changes is:

- A)** more significant for stock prices than it is for bond prices.
 - B)** more significant for bond prices than it is for stock prices.
 - C)** not significant for either bond or stock prices.
 - D)** equally significant for both bond and stock prices.
-

Question #9 of 16

Question ID: 439273

The highest speculative grade rating assigned by Moody's is:

- A)** Baa.
 - B)** Caa.
 - C)** Ba.
 - D)** B.
-

Question #10 of 16

Question ID: 439276

According to Moody's credit rating scheme, a rating below investment grade is:

- A)** Aa.
 - B)** Baa.
 - C)** Aaa.
 - D)** Ba.
-

Question #11 of 16

Question ID: 439548

Which of the following internal rating credit systems is more likely to be procyclical (i.e., tend to amplify the business cycle)?

- I. At-the-point approach.
- II. Through-the-cycle approach.

- A)** I and II.
 - B)** I only.
 - C)** II only.
 - D)** Neither I nor II.
-

Question #12 of 16

Question ID: 439540

Historically, the relationship for external ratings in predicting default has been:

- A)** opposite to what the ratings would indicate but not significant.
 - B)** fairly good in that poorly rated firms do have higher default rates.
 - C)** opposite to what the ratings would indicate and significant.
 - D)** non-existent.
-

Question #13 of 16

Question ID: 439550

Which of the following internal rating credit systems develop ratings for long time horizons (more than one year)?

- I. At-the-point approach.
 - II. Through-the-cycle approach.
-
- A)** I only.
 - B)** I and II.
 - C)** Neither I nor II.
 - D)** II only.
-

Question #14 of 16

Question ID: 439272

In the S&P credit rating scheme, the least risky speculative investment rating is:

- A)** Aaa.
 - B)** Ba.
 - C)** BB.
 - D)** AAA.
-

Question #15 of 16

Question ID: 439271

In S&P's credit rating scheme, one investment grade rating is:

- A)** BBB.
 - B)** C.
 - C)** B.
 - D)** BB.
-

Question #16 of 16

Question ID: 439547

In comparing the horizons of through-the-cycle and at-the-point approaches of rating bonds:

- A)** through-the-cycle approaches have longer horizons.
- B)** there is no set relationship.
- C)** at-the-point approaches have longer horizons.
- D)** the horizons are equal.

Topic 65: Capital Structure in Banks

Question #1 of 12

Question ID: 439585

Which of the following *best* describes the relationship between loan losses and economic capital?

- A) Unexpected loss typically exceeds economic capital.
 - B) Expected loss typically exceeds economic capital.
 - C) Economic capital typically exceeds unexpected loss.
 - D) Economic capital typically equals expected loss.
-

Question #2 of 12

Question ID: 439558

If the adjusted exposure for Bank X is \$15 million, the probability of default is 2%, and the recovery rate is 20%, what is the expected loss for Bank X?

- A) \$240,000.
 - B) \$60,000.
 - C) \$3,000,000.
 - D) \$300,000.
-

Question #3 of 12

Question ID: 439553

Which of the following formulas defines Expected Loss?

- A) Exposure × Recovery rate × Probability of default.
 - B) Exposure × Loss given default × (1 – Probability of default).
 - C) Exposure × (1 – Loss given default) × (1 – Probability of default).
 - D) Exposure × (1 – Recovery rate) × Probability of default.
-

Question #4 of 12

Question ID: 439577

Decreasing the recovery rate will do which of the following to unexpected loss?

- A) Increase UL.
- B) Decrease UL.

- C)** Recovery rate does not influence UL.
D) No change.
-

Question #5 of 12

Question ID: 439563

Unexpected loss is defined as the risk of:

- A)** actual losses minimizing expected losses.
B) expected losses matching actual losses.
C) expected losses exceeding actual losses.
D) actual losses exceeding expected losses.
-

Question #6 of 12

Question ID: 439554

Given the following information, compute the loss given default and recovery rate.

- Expected loss = \$200,000.
- Exposure = \$5,000,000.
- Probability of loss = 5%.

Loss given default Recovery rate

- | | |
|----------------|------|
| A) 0.02 | 0.08 |
| B) 0.08 | 0.02 |
| C) 0.80 | 0.20 |
| D) 0.20 | 0.80 |
-

Question #7 of 12

Question ID: 439576

If the adjusted exposure for Bank X is \$15 million, the probability of default is 2%, the recovery rate is 20%, and the standard deviation of EDF and LGD is 5% and 3%, respectively. What is the unexpected loss for Bank X?

- A)** \$240,000.
B) \$603,366.
C) \$24,270.
D) \$302,242.

Question #8 of 12

Question ID: 439571

Unexpected loss is best characterized as:

- A)** variance of unanticipated loss.
 - B)** variance of expected loss.
 - C)** standard deviation of unanticipated loss.
 - D)** standard deviation of expected loss.
-

Question #9 of 12

Question ID: 439586

The type of capital used to buffer a bank from unexpected losses is known as:

- A)** economical capital.
 - B)** unexpected capital.
 - C)** regulatory capital.
 - D)** risk-adjusted capital.
-

Question #10 of 12

Question ID: 439556

For a given loan portfolio, which of the following will unambiguously increase expected loss?

- A)** Increase recovery rate and increase probability of default.
 - B)** Increase recovery rate and decrease probability of default.
 - C)** Decrease recovery rate and increase probability of default.
 - D)** Decrease recovery rate and decrease probability of default.
-

Question #11 of 12

Question ID: 439557

For a given loan portfolio, which of the following will NOT increase expected loss?

- A)** Decrease recovery rate and decrease probability of default.
- B)** Decrease recovery rate and increase probability of default.
- C)** Increase recovery rate and decrease probability of default.
- D)** Increase recovery rate and increase probability of default.

Question #12 of 12

Question ID: 439560

Identify the effect of increasing LGD on expected loss.

- A)** Increase.
- B)** LGD is not a component of expected loss.
- C)** No effect.
- D)** Decrease.

Topic 66: Operational Risk

Question #1 of 5

Question ID: 439588

Which of the following is NOT a reason to accumulate loss data?

- A) It contributes to the understanding of future expected losses.
 - B) It focuses management attention on the magnitude and effect of risk.
 - C) Past losses are almost always repeated in the future.
 - D) It provides data necessary for empirical analysis.
-

Question #2 of 5

Question ID: 439589

One of the basic requirements of a risk control process that a risk and control self-assessment program (RCSA) fails in is the:

- A) expert opinion of managers.
 - B) independent verification of risk identification and measurement.
 - C) identification of expected losses.
 - D) ongoing assessment of the effectiveness of risk management activities.
-

Question #3 of 5

Question ID: 439587

In modeling risk frequency, it is common to:

- A) assume that risks are highly correlated.
 - B) use a Poisson distribution.
 - C) assume risk frequency and severity are the same.
 - D) use straight-line projection from the most recent loss data.
-

Question #4 of 5

Question ID: 439590

Which of the following is FALSE regarding the use of scorecard data?

- A) It is forward looking rather than backward looking.
- B) It is more subjective because it relies upon the judgment of business line managers.

- C)** It usually results in higher capital charges than the use of historical data.
 - D)** It more accurately captures the future benefits of risk management activities.
-

Question #5 of 5

Question ID: 439591

Scorecards are developed from:

- A)** random draws from external loss databases.
- B)** industry standards and guidelines.
- C)** surveys of the managers of the various business lines.
- D)** historical loss data.

Topic 67: Governance over Stress Testing

Question #1 of 5

Question ID: 727295

Regarding the key aspects of stress testing governance, which of the following statements is most likely correct regarding stress testing coverage?

- A)** Stress testing coverage can be applied to individual exposures, to the entire institution, or to various sublevels within an institution.
 - B)** Stress testing should detect risk concentrations and causes of risks that could positively impact the institution.
 - C)** Coverage should only be applied on a long-term basis.
 - D)** Stress testing results must include important factors, including portfolios, liabilities, and exposures.
-

Question #2 of 5

Question ID: 727292

Regarding the responsibilities of the board of directors and senior management in stress testing activities, which of the following statements most likely pertains specially to senior management? Senior management:

- A)** should establish robust policies and procedures to ensure compliance with stress testing these activities, reviewing and coordinating stress test activities, and remedying any issues.
 - B)** members should be critical of stress tests by actively challenging assumptions.
 - C)** should be sufficiently knowledgeable about the organization's stress testing activities to ask informed questions.
 - D)** has oversight for an organization's key strategies and decisions and is responsible and accountable for the entire organization.
-

Question #3 of 5

Question ID: 727291

Which of the following statements is most likely incorrect regarding the key elements of effective governance and controls over stress testing?

- A)** Institutions should aim for oversight that is tailored to the complexity and characteristics of the specific institution.

- B)** Effective governance and controls are critical to ensuring that stress tests are conducted appropriately and are subject to adequate oversight.
- C)** Proper governance and controls are especially important for stress tests that are qualitative in nature and where stress tests require a very small number of assumptions.
- D)** Key elements of effective governance and controls over stress testing include the governance structure, policies and procedures, documentation, validation and independent review, and internal audit.
-

Question #4 of 5

Question ID: 727293

Prudent governance should also incorporate ongoing validation and independent review of stress testing activities. Challenges with model validation may be addressed through any of the following actions except:

- A)** sensitivity analysis and simulation techniques.
- B)** expert-based judgment.
- C)** putting greater emphasis on ensuring that stress tests remain sound.
- D)** benchmarking to the S&P 500 Index.
-

Question #5 of 5

Question ID: 727294

The role of the internal audit in stress testing governance and control is an important component of an institution's governance and controls. Which of the following statements is most likely incorrect regarding the internal audit's role? The internal audit:

- A)** should be dependent on other departments with sufficient knowledge and technical expertise when conducting their reviews.
- B)** is intended to assess the integrity and reliability of an institution's policies and procedures, including those pertaining to stress tests.
- C)** should review the procedures pertaining to the documentation, review, and approval of stress tests.
- D)** should verify that stress tests are conducted thoroughly and as intended, and that the staff in charge of these activities possesses the necessary expertise and adheres to the appropriate policies and procedures.

Topic 68: Stress Testing and Other Risk Management Tools

Question #1 of 12

Question ID: 746113

Which of the following would *least likely* be associated with conducting a stress test?

- A) Monte Carlo simulations that generate extreme values.
 - B) Using one-percentile values of factors in an estimated factor analysis equation.
 - C) Market values and relationships observed during the Crash of 1987.
 - D) Modified VaR where kurtosis is three and skewness is zero.
-

Question #2 of 12

Question ID: 439595

Assume that the value at risk (VAR) over a 1-day time horizon for an \$80 million equity portfolio at the 95 percent confidence level is calculated to be \$792,000. Which of the following is a *drawback* to this VAR calculation?

- A) The measure is backward looking.
 - B) The interpretation of the VAR measure would be different for a fixed-income portfolio.
 - C) The actual loss in a time of extreme market stress could be much greater than \$792,000.
 - D) Increasing the time period used in the calculation will increase the VAR.
-

Question #3 of 12

Question ID: 439598

Stress testing is considered an intuitive risk management tool because:

- A) recent historical data greatly aids in the scenario selection.
 - B) major structural shifts can be anticipated by business line managers.
 - C) scenarios are drawn from factors that would likely impact portfolio value.
 - D) correlation between underlying exposures is ignored.
-

Question #4 of 12

Question ID: 439597

Which of the following would **NOT** be considered stress testing?

- A) Exchange rate depreciation of 10% between \$US relative to Japanese Yen.
- B) Yield curve twist of 50 basis points.

- C) Treasury yield curve shift of 100 basis points.
 - D) S&P 500 index drop of 1%.
-

Question #5 of 12

Question ID: 439601

Which of the following is **NOT** a use of stress testing?

- A) It can highlight weaknesses in contingency planning and assumptions.
 - B) It can be used for capital allocation across business units.
 - C) Stress testing complements value at risk (VAR).
 - D) It enables the risk manager to eliminate all risk from a portfolio.
-

Question #6 of 12

Question ID: 439602

Which of the following is **NOT** a disadvantage of using stress testing? Stress testing:

- A) reflects only normal circumstances.
 - B) fails to measure the by-products of major factor movements.
 - C) fails to include the simultaneous adverse movements of risk factors.
 - D) reflects the analyst's intentional and unintentional misspecification of the model.
-

Question #7 of 12

Question ID: 439600

Which of the following would *least likely* be a part of a stress test?

- A) Choosing the market factors.
 - B) Choosing the time period over which the stress will take place.
 - C) Computing market value at risk.
 - D) Adjusting the correlations of risk factors.
-

Question #8 of 12

Question ID: 439594

Which of the following statements *best* describes the uses of stress analysis?

- A)** Scenario analysis can be used to model one-off hypothetical events but not actual events since their probability of occurrence is very minuscule and, as they have already occurred, they are not likely to recur.
- B)** Scenario analysis, which is a special case of stress analysis, suffers from limitations on implementing a consistent and manageable approach.
- C)** Stress analysis has several advantages over a value at risk (VAR) only approach that includes: highlighting inappropriate assumptions, hidden vulnerabilities, and the ability to be able to forecast probability of rare but damaging events.
- D)** Stress analysis can be used to enhance VAR analysis by focusing on the extent of loss in an extreme event.
-

Question #9 of 12

Question ID: 439593

Which of the following *most accurately* describes the relationship between computing internal capital requirements using a stress testing approach versus a value at risk (VAR) capital strength approach? Stress testing approaches:

- A)** complement VAR approaches since they account for scenarios that may not be properly considered in VAR approaches.
- B)** should never be used since they are based entirely on subjective inputs.
- C)** are substitutes for VAR approaches since they better measure the entire spectrum of potential outcomes.
- D)** can never be combined with VAR approaches because they are based on different probability distributions.
-

Question #10 of 12

Question ID: 439603

Which of the following is **NOT** a drawback to stress testing?

- A)** It identifies important factors not observed in historical data.
- B)** The number of scenarios increases greatly with additional risk factors.
- C)** Historical correlations mix normal and hectic periods.
- D)** Calculated losses may be extremely high relative to the 99% VAR significance level.
-

Question #11 of 12

Question ID: 439599

Stress testing is a non-statistical risk management tool because:

- A)** non-parametric analysis is used.

- B)** losses are computed based on anticipated movements in key variables without specific probabilistic statements.
 - C)** it is objective in its determination of scenarios to evaluate.
 - D)** it specifies the minimum loss that will occur for a given significance level.
-

Question #12 of 12

Question ID: 439596

Which of the following is **NOT** an objective of stress testing? Simulate:

- A)** temporary changes in key variables.
- B)** permanent structural shifts.
- C)** shocks that do not appear in historical data.
- D)** shocks that are less likely to appear than historical evidence indicates.

Topic 69: Principles for Sound Stress Testing Practices and Supervision

Question #1 of 5

Question ID: 439613

Which of the following statements is (are) CORRECT regarding stress testing methodologies?

- I. Prior to the recent crisis, stress testing methodology was based on an underlying assumption that risk is generated by unknown and non-stochastic processes.
- II. The process of reverse testing involves a scenario of known outcome, identification of likely events producing the outcome and evaluation of effectiveness of risk mitigating strategies to deal with the risk outcome.
- III. Basis risk is the difference in the prices (or interest rates) between the cash market and the futures market.
- IV. Contingent risk arises due to contractual agreements only.

A) I, II and III.

B) III only.

C) I only.

D) II only.

Question #2 of 5

Question ID: 439614

Which of the following statement is (are) CORRECT? Stress testing plans should take into consideration inter-correlations between:

- I. reputational and liquidity risks.
- II. funding and market risks.
- III. market and pipeline risks.
- IV. basis and liquidity risks.

A) I, II and III.

B) I and II.

C) I only.

D) I, II, III and IV.

Question #3 of 5

Question ID: 528930

Which of the following statements is incorrect regarding stress testing principles for supervisors?

- A)** Supervisors should ignore stress tests that produce unrealistic results or are inconsistent with a bank's risk appetite.

- B)** It is prudent for supervisors to conduct additional stress tests using common scenarios within a bank's jurisdiction.
 - C)** In order to expand their knowledge of stress testing, supervisors should consult with other experts to identify potential stress vulnerabilities.
 - D)** Supervisors should make frequent and comprehensive assessments of a bank's stress testing procedures.
-

Question #4 of 5

Question ID: 439612

Which of the following is not a step in the reverse stress testing methodology?

- A)** outcome.
 - B)** events.
 - C)** cause.
 - D)** hedging.
-

Question #5 of 5

Question ID: 528929

In the context of stress testing principles for banks, which of the following statements is correct regarding wrong-way risk? Wrong-way risk emerges when:

- A)** the probability of default of counterparties increases as a result of general market conditions.
- B)** a company purchases an option on its own stock.
- C)** a decline in an asset value may dry up its liquidity.
- D)** there are changes in basis between the opening and closing of a futures position.