FRM Part II Exam

By AnalystPrep

Questions - Market Risk Measurement and Management

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Reading 63: Estimating Market Risk Measures: An Introduction and Overview

Q.1475 If Profit/Losses (P/L) are distributed normally with a standard deviation of 18 and a mean of 12, then what is the value of the corresponding VaR using a 95% confidence interval?

A. 9.87.

B. 17.61.

C. 13.956.

D. -13.956.

Q.1479 A generally coherent risk measure tends to involve increasingly sophisticated weighting functions. Which of the following is a suitable replacement for the equal weights in the 'average VaR' to estimate any risk measure?

A. Average weights.

B. Exponential weights.

C. Weights appropriate to risk measure being estimated.

D. Fixed weights regardless of risk measure being estimated.

Q.1480 Coherent risk measures are fundamental in the field of risk management, providing a consistent framework for assessing the risk of financial portfolios. The key to estimating coherent risk measures lies in the:

A. Ability to assign weights to assets in a portfolio accurately.

B. Ability to calculate exponential value accurately.

C. Ability to estimate quantiles.

D. Ability to approximate risk exposure.

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Q.1481 The precision of a risk measure estimate is evaluated using the corresponding standard error(s). On which of the following does the quantile (VaR) standard error depend?

A. f(q), Sample size n and p.

B. p, Standard error s and variance of q.

C. Sample size n, p, and the square root of the error.

D. Variance of q, sample size n and f(q).

Q.1482 A portfolio has a beginning period value of $200. The arithmetic returns follow a normal distribution with a mean of 5% and a standard deviation of 10%. Calculate VaR at both the 95% and 99% confidence levels, respectively:

A. $23, $36.6.

B. $43, $56.6.

C. $1.65, $2.33.

D. $23, $43.

Q.2628 You are assigned to calculate the monthly VaR for the stock of Apex Inc. You are provided with the following data for the ten worst returns of the stock during the last 100 months:
-12%, -7%, -32%, -26%, -24%, -20%, -19%, -17%, -15%, -14%

Which of the following is closest to the monthly VaR for Apex, using a confidence level of 95%?

A. -32%.

B. -17%.

C. -12%.

D. -14.5%.

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Q.2632 An analyst has gathered the following information about a portfolio that has normally distributed geometric returns:

Mean	10%
Standard Deviation	40%
Portfolio	100 million

What is the 95% lognormal VAR for this portfolio?

A. $74.7 million.

B. $35.3 million.

C. $42.8 million.

D. $113.4 million.

Q.2636 Jacob Watson is a risk manager for a large bank. Presently, he is estimating the VaR for the equities portfolio of the bank. He is considering estimating the VaR using normal and lognormal distribution assumptions. He has gathered the following information about the portfolio:

Value of the portfolio	USD 1 million
Mean	15%
Volatility	25%

What would be the 1-year 99% VaR for the portfolio under the two assumptions?

A. Normal distribution: $495,000; Lognormal distribution: $460,000.

B. Normal distribution: $460,000; Lognormal distribution: $495,000.

C. Normal distribution: $432,500; Lognormal distribution: $351,000.

D. Normal distribution: $499,000; Lognormal distribution: $432,500.

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Q.2817 Assume that the P/L over a specified period is normally distributed and has a mean of 14.1 and a standard deviation of 28.2. What is the 95% VaR and the corresponding 99% VaR?

A. The 95% VaR is 32.289 and the 99% VaR is 51.4932.

B. The 95% VaR is 36.495 and the 99% VaR is 51.556.

C. The 95% VaR is 55.236 and the 99% VaR is 36.49551.

D. The 95% VaR is 36.225 and the 99% VaR is 41.586.

Q.2818 Over time, the arithmetic returns r_t are normally distributed with a mean of 1.55 and a standard deviation of 1.07. The portfolio is currently worth 1 unit. Calculate the 95% VaR and the 99% VaR.

A. The 95% VaR is 2.3658 and the 99% VaR is 3.6588.

B. The 95% VaR is 1.4542 and the 99% VaR is 0.0652.

C. The 95% VaR is 0.6742 and the 99% VaR is 3.00896.

D. The 95% VaR is 0.21015 and the 99% VaR is 0.93882.

Q.2819 Let&rsquo assumes that the geometric returns R_t are normally distributed with a 0.079 mean and 0.312 standard deviations. Further assumption is that the portfolio is currently worth 1 unit. Calculate the 95% and 99% lognormal VaR.

A. The 95% VaR is 0.8951 and the 99% VaR is 0.2351.

B. The 95% VaR is 0.88526 and the 99% VaR is 0.56898.

C. The 95% VaR is 0.3522 and the 99% VaR is 0.4762.

D. The 95% VaR is 0.8951 and the 99% VaR is 0.56898.

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Q.3011 Assume you are dealing with a stock " A" that displays a highly negatively skewed distribution comprised of the past 260-days returns. Suppose you have P1 = A and P2 = -A, meaning P1 is long stock A and P2 is short stock A. Which statement is most likely to be accurate about a 99% VaR?

A. |VaR (P1)| > |VaR (P2)|.

B. |VaR (P1)| < |VaR (P2)|.

C. VaR (P1) = VaR (P2).

D. Cannot be concluded from the given information.

Q.3036 What would be the 95% parametric VaR of a portfolio made of two independently normally distributed stocks – A and B, with $A \sim N(0.5, 1)$ and $B \sim N(3, 15)$? Assume that $P = (A + B)$

A. 56.

B. 4.87.

C. 3.08.

D. 1.54.

Q.5289 An investment banker is evaluating the risks of a portfolio of bonds. The portfolio is valued at CAD 150 million and contains CAD 20 million in bond X. The annualized standard deviations of returns of the overall portfolio and bond X are 12% and 9%, respectively. The correlation of returns between the portfolio and bond X is 0.60. Assuming the investment banker uses a 1-year 99% VaR and the returns are normally distributed, what is the VaR of bond X?

A. CAD 1,453,879.

B. CAD 4,186,800.

C. CAD 5,813,777.

D. CAD 4,636,800.

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Q.5292 A data scientist is analyzing a dataset and wants to determine the distribution of his data. The scientist decides to use a QQ plot in his analysis. Which of the following statements about QQ plots is correct?

A. QQ plots are used to evaluate the precision of a statistical estimator.

B. QQ plots are useful in determining the statistical significance of a hypothesis test.

C. QQ plots should only be used when the sample size is greater than 100.

D. QQ plots are useful in determining if a dataset follows a normal distribution.

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Reading 64: Non-parametric Approaches

Q.1487 The non-parametric density estimation is based on the assumption that a basic historical simulation does not get the best out of the information at hand. Which of the following examples demonstrates this drawback?

A. If we have 100 P/L observations, the basic HS only permits us to estimate VaR at discrete confidence levels, say, 95%.

B. If we have 100 P/L observations, the VaR at the 95% confidence level is given by the seventh-largest loss.

C. If we have 100 P/L observations, the VaR at the 95% confidence level is given by the fourth-largest loss.

D. If we have 100 P/L observations, the VaR at the 95% confidence level is given by the ninth-largest loss.

Q.1490 Estimating historical simulation ES or VaR does not have any theoretical problems; however, it has a practical problem. Which one is it?

A. As the holding period decreases, the number of observations decreases too.

B. As the holding period increases, the number of observations decreases.

C. As the holding period decreases, the size of data decreases.

D. As the holding period increases, the size of the data decreases.

Q.1492 Bootstrapping is a common technique in financial modeling and statistics, used to construct yield curves or to estimate the distribution of a statistic. Understanding its correct application is crucial for accurate analysis. Which one of the following statements is most likely correct? A bootstrapping exercise:

A. resampling from our existing data set without replacement.

B. assumes that the distribution of returns will remain the same in the past and in the future.

C. assumes that the distribution of returns in future will be markedly different from past distributions.

D. results in a VaR estimate that is a sum of sample VaRs after repeated sampling.

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Q.1495 Even though bootstrapping has numerous advantages, the bootstrap estimates are associated with a little bias or error. Which of the following presents an error of bootstrapping?

A. Un-sampling variability.

B. Re-sampling variability.

C. Dual-sampling variability.

D. Bootstrapping variability.

Q.1496 One of the drawbacks of the historical simulation approach is that the discreteness of the data rules out estimation of VaRs between data points. For example, if there were 100 historical observations, estimation of the VaR is a straightforward process at the 95% or the 96% confidence levels, but it is impossible to incorporate a confidence level of, say 95.5%. Which of the following methods can solve this problem?

A. Applying Brute Force

B. Bootstrapping

C. Non-parametric density estimation

D. Use of a large number of re-samples

Q.2631 An analyst performing a historical simulation to measure the VaR of a portfolio uses a volatility-weighted approach. One month ago, the actual return of the asset was 5% and its daily volatility estimate was 2%. If the current daily volatility is 1.5%, calculate the volatility-adjusted return.

A. 0.03

B. 0.0167

C. 0.0375

D. 0.0667

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Q.2820 The mean return from a dataset has been pre-calculated and is given as 0.04. The standard deviation has also been given as 0.32. With 90% confidence, what will be our percentage maximum loss? Assume that from our dataset, Z = -1.28 and N(Z) = 0.10 since you are to locate the value at the $10th$ percentile.

A. 36.96%

B. 11.27%

C. 11.32%

D. 36.72%

Q.2822 There are 30 observations in a dataset. The worst 10 return observations (in %) are listed below:
[-20, -18, -18, -17, -15, -14, -12, -10, -7, -3]

What is the VaR at the 90% confidence?

A. 17%

B. 18%

C. 16%

D. 15%

Q.2831 Find the weight of an observation 13 days ago if the total number of days in the historical window is 300 with a 0.8 control rate of memory decay.

A. 0.014

B. 0.01099

C. 0.0205

D. 0.01374

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Q.3010 You have been hired on a popular trading floor and one of the traders comes over and asks about the impact of price changes on her VaR - made of a single long position in stock KKJL. Yesterday's closing price was USD 100.
You are using a 95% confidence historical VaR based on a 260 days moving window of historical data. In this time period, the 16 worst 1-day returns from for KKJL as of yesterday were as follows (in %): -9.5, -8, -7.6, -7.4, - 7.2, -7.18, -7.1, -6.9, -6.57, -6.56, -6.45, -6.4, -6.25, -6.05, -5.99, -5.85.

Suppose that the stock price decreased by 10% between yesterday and today following the publication of an adverse dossier on the company. The latest return to slip out of the 260-day moving window is -3%.

What will be the Historical VaR at 95% confidence in absolute terms?

A. USD 6.25

B. USD 5.445

C. USD 5.625

D. USD 6.05

Q.3012 Simon is using the age-weighted historical simulation approach to estimate the VaR of a stock portfolio, Under age-weighted historical simulation,

A. more recent observations are weighted more and distant observations weighted less.

B. all observations are weighted equally.

C. the decay parameter takes a value of 1.

D. the historical window of observations must not exceed 250 days.

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Q.3035 Paul is using the age-weighted historical simulation approach to estimate the VaR of a stock portfolio, with a historical sample size of 100 days and a decay factor of 0.96. Over the recent past, the portfolio has registered the following returns:

Return	Periods Ago(Days)
−3.2%	109
−3.3%	75
−2.3%	66
−1.3%	22
−3.0%	45

Determine the weight on the return earned 45 days ago

A. 0.05.

B. 0.0025.

C. 0.0065.

D. 0.006751.

Q.3037 You have been hired on the trading floor, and one of the traders comes over and asks about the impact of a price change on her VaR made of a long position in stock A, whose value stood at 100 as of yesterday.
Assume you are using a 95% confidence historical VaR (based on 260 days moving window of historical data). Further, assume that the 16 worst 1-day returns of stock as of yesterday were as follows:

-9.5, -8, -7.6, -7.4, - 7.2, -7.18, -7.1, -6.9, -6.57, -6.56, -6.45, -6.4, -6.25 -6.05, -5.99,-5.85.

Assume the price of the stock increased by 10% between yesterday and today. Further, assume that the oldest return is not among the returns given. What will the value of today's 95% VaR (in absolute value) be?

A. $6.25.

B. $6.655.

C. $10.

D. $6.05.

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Q.5295 A data analyst wishes to calculate the VaR of a credit firm using the bootstrap historical simulation approach. How is the final VaR estimate calculated using the bootstrap historical simulation approach?

A. By taking the highest VaR from all resamples.

B. By taking the lowest VaR from all resamples.

C. By averaging the VaR from all resamples.

D. By taking the median VaR from all resamples.

Q.6431 Compared to basic (raw) historical simulation, which of the following statements correctly characterizes what occurs during bootstrapping?

A. Bootstrapping compresses the original data, leading to repeated observations.

B. It replicates the most extreme historical returns in every sample.

C. It scales each historical return by a constant factor obtained from the sample's mean.

D. It resamples (with replacement) many times, creating multiple "alternative" data sets.

Q.6432 Which statement correctly captures the essence of a correlation-weighted approach within the historical simulation framework?

A. It forces all pairwise asset correlations to zero by partitioning returns into uncorrelated blocks while leaving individual volatilities unchanged.

B. It imposes a desired set of updated correlations among assets by systematically adjusting historical returns, typically without altering each asset's overall volatility.

C. It re-weights observed co-movements to ensure the sample correlation matrix matches a diagonal matrix (i.e., only variances remain, covariances are nullified).

D. It replicates only those return paths whose correlations exceed a specified threshold, discarding paths that deviate from the target correlation profile.

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Q.6433 Which of the following most closely characterizes the role of filtered historical simulation in estimating risk?

A. It fits a time-varying volatility model (e.g., GARCH) and then adjusts historical returns before resampling, reflecting evolving market conditions.

B. It reorders past returns chronologically to match any short-term volatility changes but leaves correlation unaltered.

C. It discards all returns that fall outside a user-defined confidence interval, ensuring that the final distribution is free of extreme tail events.

D. It transforms each asset’s average return into a standardized zero mean but leaves the standard deviation fixed at its historical level.

Q.6434 A small prop trading firm has only 80 days of historical returns. They want to estimate VaR at 97.5% but find the traditional historical simulation percentile approach too coarse. The head quant suggests a non-parametric density estimation method. What key benefit does this non-parametric approach offer the firm?

A. Increased sample size

B. Flexible percentile selection

C. Zero outliers

D. Constant correlation

Q.6435 An analyst implements filtered historical simulation on commodity returns. She first fits a GARCH model, generates volatility forecasts, and standardizes each day’s return. Then she resamples these standardized returns to estimate future risk. Which aspect best defines “filtered” in this context?

A. Zero-sum weighting

B. Conditional volatility adjustment

C. Ignoring non-positive returns

D. Age-based discard of old data

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Reading 65: Parametric Approaches (II): Extreme Value

Q.2175 Extreme events have a very low probability of occurrence but are nonetheless taken very seriously in the financial world. Which of the following best explains why?

A. Extreme events tend to recur at rather regular time intervals.

B. Extreme events rarely have warning signs and thus markets cannot prepare for them in any way.

C. Extreme events are normally very costly and can create a "ripple" effect on the global market.

D. No models have been developed to accurately predict and estimate the effects of extreme events in qualitative terms.

Q.2176 Modeling extreme events in various fields, particularly in finance and risk management, often presents a significant challenge. This difficulty arises primarily due to certain factors that hinder the effective modeling of these events. What is the primary reason why modeling extreme events is typically difficult and problematic?

A. A lack of models that can estimate the effects of certain extreme but possible events.

B. A lack of qualified personnel to oversee the modeling process.

C. A lack of credible, reliable input data.

D. The fact that extreme event modeling requires a considerable investment of time and expertise.

Q.2177 In risk management and financial modeling, accurately capturing the impact of extreme events is crucial for assessing potential risks and safeguarding investments. Extreme events can best be modeled through the application of:

A. The central limit theorem

B. The standard normal distribution

C. Extreme-value theorems

D. The exponential distribution

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Q.2179 The following is the probability distribution function of the generalized extreme value distribution:

$$H_{\xi,\mu,\alpha} = \begin{cases} \exp\left[-\left(1+\frac{\xi(X-\mu)}{\sigma}\right)^{-\frac{1}{\xi}}\right], & \xi \neq 0 \\ \exp\left[-\exp\left(-\frac{(X-\mu)}{\sigma}\right)\right], & \xi = 0 \end{cases}$$

Where X satisfies the condition $1 + \frac{\xi(X-\mu)}{\sigma} > 0$
If $\xi > 0$, the GEV becomes the:

A. Frechet distribution

B. Pareto distribution

C. Gumbel distribution

D. Weibull distribution

Q.2180 If $\xi < 0$, the GEV becomes the Weibull distribution, but this distribution is rarely used to model financial returns mainly because:

A. Its cumulative distribution has heavier than normal tails and very few empirical financial returns are heavy-tailed.

B. Its cumulative distribution has lighter than normal tails and very few empirical financial returns are light-tailed.

C. It’s asymmetric.

D. It’s symmetric.

Q.2182 For the standardized Frechet distribution with ξ=0.3, the 5% quantile is equal to:

A. -0.9

B. -0.834

C. -0.4567

D. -0.9349

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Q.2957 Assuming that we are given the following parameters based on the empirical values from contracts on futures clearing companies; $\beta = 0.7$, $\xi = 0.12$, $u = 3\%$, $N_{u/n} = 5\%$. Compute the VaR and the Expected Shortfall at 99.5%, respectively.

A. VaR: 1.674; Expected Shortfall: 2.453

B. VaR: 4.856; Expected Shortfall: 5.905

C. VaR: 1.453; Expected Shortfall: 2.420

D. VaR: 1.667; Expected Shortfall: 2.554

Q.3993 To retrieve the value at risk (VaR) for the U.S stock market under the generalized extreme-value (GEV) distribution, a risk analyst uses the following equation which characterizes a heavy-tailed Fréchet distribution.

$$\mathrm{VaR}_{\alpha} = \mu_n - \frac{\sigma_n}{\xi_n}\left[1 - (-n\ln(\alpha))^{-\xi_n}\right]$$

The analyst uses the following somewhat "realistic" parameters:

- Location, $\mu = 3.0\%$
- Scale, $\sigma = 0.80\%$
- Tail index, $\xi = 0.20\%$

If the sample size, n = 100, then which is **nearest** to the implied 99.90% VaR?

A. 2.3651%

B. 2.547%

C. 3.521%

D. 5.3389%

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Q.3994 In FRM parlance, an extreme value is one that has a low probability of occurrence but potentially disastrous (catastrophic) effects. The main challenge posed by extreme values is that:

A. They do not conform to any of the established loss distributions

B. They can only be fully characterized by multiple loss distributions

C. They are too big such that the resulting loss estimates are infinitely large

D. There are only a few observations from which a credible, reliable analytical model can be built

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Q.4000 For the standardized Gumbel, determine the 5% quantile, 95% quantile and the 99% quantile, respectively.

A. -1.0972; 2.9702; 4.6001

B. -2.0845; 0.0052; 0.0041

C. 4.5614; 3.8542; 2.7823

D. -1.0965; 0.0052; -2.0485

Q.4003 In practice, risk analysts prefer the Peaks-over-threshold (POT) approach over the generalized extreme value approach because the POT approach:

A. Is less time consuming

B. Is more efficient in the use of data

C. Does not require the analyst to choose a threshold

D. Allows for modeling of exceedances over a high threshold

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Q.4004 To retrieve the value at risk (VaR) for the U.S stock market under the generalized extreme-value (GEV) distribution, a risk analyst uses the following somewhat "realistic" parameters:

- Location, $\mu = 4.0\%$
- Scale, $\sigma = 0.80$
- Tail index, $\xi = 0.5$

If the sample size, n = 100, then which is **nearest** to the implied 99.90% VaR?

A. 2.2500%

B. 7.4583%

C. 4.1002%

D. 2.5512%

Q.4005 Assume the following observed parameter values:

- $\beta = 0.60$
- $\xi = 0.30$
- $\mu = 1\%$
- $\frac{N_\mu}{n} = 5\%$

Compute the VaR at 99% confidence and the corresponding expected shortfall.

A. VaR = 2.25% ; ES = 3.5%

B. VaR = 2.2548% ; ES = 0.5252%

C. VaR = 2.2413% ; ES = 3.6304%

D. VaR = 1.5825% ; ES = 2.2385%

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Q.4006 Dyer and Blair Investment bank has an active position in commodity futures and is using the peaks-over-threshold (POT) approach (EVT) to estimate value at risk (VaR) and expected shortfall (ES) in accordance with extreme value theory. After careful consideration, the firm's risk managers have settled on a threshold level of 5.00% to evaluate excess losses. This choice of the threshold is informed by the realization that 3.0% of the observations are in excess of this threshold value. As displayed below, empirical analysis suggests the two other distributional parameters: scale, $\beta = 0.70$; and shape (aka, tail index), $\xi = 0.25$.

Parameter	Value
Loss threshold, u	5.00%
No. of observations, N	700
No. of observations that exceed threshold, N(u)	21
N(u)/N	3.00%
Scale, β	0.70
Shape, aka, tail, ξ	0.25

Determine the VaR at the 99% confidence level.

A. 0.02225

B. 0.04125

C. 0.05885

D. 0.05151

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Q.4007 Kelvin Streetman is evaluating the extreme risks associated with active contracts on a futures clearing house. He intends to use the peaks-over-threshold (POT) approach (EVT) to estimate value at risk (VaR) and expected shortfall (ES) in accordance with extreme value theory. Kelvin has set parameters at some empirically plausible values denominated in % terms as displayed below:

Parameter	Value
Loss threshold, u	5.00%
No. of observations, N	700
No. of observations that exceed threshold, N(u)	21
N(u)/N	3.00%
Scale, β	0.70
Shape, aka, tail, ξ	0.25

At the 99.0% confidence level, the position's VaR under the POT approach is 5.885%. Which is **nearest** to the corresponding 99.0% expected shortfall (ES)?

A. 0.075426

B. 0.071133

C. 0.01885

D. 0.0225

Q.4009 According to the Fisher-Tippett theorem, as the sample size n gets large, the distribution of extremes converges to:

A. a uniform distribution

B. a normal distribution

C. a generalized extreme value distribution

D. a generalized Pareto distribution

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Q.4010 As the threshold level, u, gets large, the Gnedenko—Pickands—Balkema—DeHaan (GPBdH) theorem states that the distribution above-threshold observations converges to:

A. a normal distribution

B. a generalized extreme value distribution

C. a generalized Pareto distribution

D. a uniform distribution

Q.4011 In setting the threshold in the POT approach, which of the following statements is most accurate? Setting the threshold relatively low makes the model:

A. more applicable but decreases the number of observations in the modeling procedure.

B. less applicable and decreases the number of observations in the modeling procedure

C. more applicable but increases the number of observations in the modeling procedure.

D. less applicable but increases the number of observations in the modeling procedure.

Q.4012 The peaks-over-threshold approach is a method used in extreme value theory to analyze the tail behavior of a distribution. This technique is particularly useful for assessing the risk of rare and extreme events. The peaks-over-threshold approach generally requires:

A. fewer estimated parameters than the GEV approach and shares one parameter with the GEV.

B. fewer estimated parameters than the GEV approach and does not share any parameters with the GEV approach

C. more estimated parameters than the GEV approach and shares one parameter with the GEV.

D. more estimated parameters than the GEV approach and does not share any parameters with the GEV approach.

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Reading 66: Backtesting VaR

Q.1499 While conducting backtesting of VaR as an FRM manager, an accurate model is one where:

A. The number of exceptions should be greater than the VaR significance level.

B. The number of exceptions should be less than the VaR significance level.

C. The number of exceptions should be equal to the VaR significance level.

D. The number of exceptions should be zero.

Q.1502 Matthew Hopkins is invited to interview for a position as a financial risk manager. After completing an initial set of questions, the interviewer asks for the interpretation of the following case: a $20 million 15-day VAR figure having a confidence level of 95%. Which of the following represents the CORRECT interpretation?

A. There is a 5 percent chance that there will be a gain of greater than $20 million in a time period of 15 days.

B. The corresponding VAR of the following day is $20 million, with a confidence interval of 95%.

C. The amount of minimum loss spread over the next 15 days is at least $20 million with a confidence of 95%.

D. The amount of loss spread over the next 15 days is expected to be less than $20 million in 95 percent of case scenarios.

Q.2637 Jason Black, a risk analyst at a large multinational bank, is backtesting the VaR model of the bank. The model being tested is a daily, 98% VaR model. If the backtest is conducted for one year at a two-tailed 95% test confidence level, and assuming that a year has 252 trading days, what is the least acceptable number of daily losses that will lead Black to conclude that the model is calibrated correctly?

A. 12

B. 9

C. 10

D. 11

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Q.2643 The Basel Committee has defined four **major** reasons for exceptions found during backtesting. These include all of the following, except:

A. Model not calibrated to market conditions

B. Model lacks basic integrity

C. Intraday trading

D. Bad luck

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Reading 67: VaR Mapping

Q.1511 Risk measurement is widely practiced in the financial sector to establish the risk characteristics of trading instruments and portfolios. This is done via several methods some of which can be time-consuming and complex because it is literally impractical to measure all risk factors individually. Hence, the VaR method is used through the process of mapping to:

A. Simplify a portfolio by mapping positions on selected risk factors

B. Simplify a portfolio by mapping positions on all risk factors which can have a minor or major impact on the performance of an instrument

C. Simplify portfolio by mapping positions on only five risk factors

D. Simplify portfolio by mapping positions on all abnormal risk factors which can impact the performance of an instrument

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Q.1512 Mapping is a useful process and also an instructive one because it provides useful judgments about risk drivers of derivatives. Financial institutions cannot always use historical prices to develop a risk profile for the instrument. In addition, they cannot develop risk profiles of options on the basis of historic values. Therefore, mapping gives us a way to handle these practical problems when:

A. characteristics of instrument do not change over time.

B. characteristics of instrument change over time.

C. a large number of factors needs to be measured separately for each position.

D. the characteristics of the instrument are only exposed to a single major risk factor.

Q.1513 As we know, mapping is the simple process of analyzing the market instruments on primitive risk factors. Considering this concept, let’s take a single instrument that has a market value of V_m. It is allocated to specific risk exposures namely X_1, X_2, and X_3. Suppose not all of the current market value V_m is allocated to these risk factors, and there are no omitted factors. What does that imply with regard to the remaining value?

A. The remainder value is not exposed to any risk.

B. The remainder value is allocated to cash which is not a risk factor.

C. The remainder value is allocated to a separate set of risk factors.

D. The remainder value’s risk exposure is very difficult to measure.

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Q.1514 In the process of mapping, finance experts first need to choose the most effective set of primitive risk factors against which the market instrument will be positioned to measure risk. This choice of factors must be balanced between time devotion and accurate risk measurement. In short, the choice of primitive risk factors should reflect:

A. The easiest way to get better results in the least amount of time.

B. The trade-off between models with a large number of factors and less complex models.

C. The trade-off between better quality of approximation and faster processing.

D. The trade-off between specific risks with significant effects and those with insignificant effects.

Q.1515 Once we have selected the risk factors, then, the next step is to map the portfolio or instrument positions against these risk factors which can be achieved through any of the three approaches of mapping, depending on the best suitable approach. In choosing the mapping approach, which important factor should be kept in mind?

A. Mapping should only preserve the market value of the instrument.

B. Mapping should preserve the par value as well as the market risk of the position.

C. Mapping should preserve the market value as well as the interest rate risk of the position.

D. Mapping should preserve the market value as well as the market risk of the position.

Q.1516 Considering an example of a two-bond portfolio, we calculated the portfolio returns and the risks associated with those portfolios using the mapping technique. Then, we found some specific values, say, 2.80 VaR for duration mapping and 2.67 VaR for cash flow mapping. This notable difference in these values is due to the fact that:

A. risk measures are not perfectly linear with maturity and correlations are below unity.

B. risk measures are perfectly linear with maturity and correlations are below unity.

C. risk measures are perfectly linear with maturity and correlations are above unity.

D. risk measures are not perfectly linear with maturity and correlations are equal to unity.

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Q.1517 Benchmarking is the process of evaluating a portfolio's risk against some standard or ideal portfolio risk that is considered as the benchmark. Therefore, the VaR of the deviation of portfolio A relative to the benchmark is

$$\text{Tracking Error VaR} = \alpha\sqrt{(x - x_0)' \Sigma (x - x_0)}$$

After we performed the necessary calculations for portfolio A, we found the tracking error VaR of portfolio A which is 0.63 million.What does this tracking error VaR value imply?

A. The maximum deviation between the index and portfolio A is at most 0.63 million under normal market conditions.

B. The minimum deviation between the index and portfolio A is at most 0.63 million under normal market conditions.

C. The maximum deviation between the index and portfolio A is at most 0.63 million under abnormal market conditions.

D. The minimum deviation between the index and portfolio A is at most 0.63 million under abnormal market conditions.

Q.1519 Forward contracts are the simplest types of derivatives and their risk can easily be calculated through basic building blocks forming those contracts. But before buying forward contracts, an investor needs to make a decision between two alternatives which are economically equivalent. The usual options available to the investor are to:

A. buy X units of any asset at price P and sell them at a higher price to potentially earn profits or enter into a forward contract to buy one unit of the asset in one period.

B. buy X units of any asset at price P and hold them for one period or enter into a forward contract to buy one unit of the asset in two periods.

C. buy X units of any asset at price P and hold them for one period or enter into a forward contract to buy one unit of the asset in one period.

D. buy X units of any asset at price P and sell them at a higher price to potentially earn profits or enter into a forward contract to buy one unit of the asset in one period at the lowest price possible.

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Q.1520 One of the methods of cash flow mapping involves decomposing bond risk into the risk of each of the bond's cash flows. This describes:

A. Principal mapping

B. Duration mapping

C. Cash flow mapping

D. Present value mapping

Q.1522 To determine the value of forward contracts, we decompose the forward contract into its main building blocks which will impose the net effect on the risk and price of the forward contract. This methodology can also be used for long-term currency swaps which are typically identical to portfolios of forward contracts. Keeping this scenario in mind, which of the following statements is true?

A. A 5-year contract to pay dollars and receive Euros is equivalent to a series of 5 forward contracts to exchange a set amount of dollars per year.

B. A 5-year contract to pay dollars and receive Euros is equivalent to a series of any number of forward contracts to exchange a set amount of dollars per year.

C. A 5-year contract to pay dollars and receive Euros is equivalent to a single forward contract to exchange a set amount of dollars per year.

D. A 5-year contract to pay dollars and receive Euros is not equivalent to a series of 5 forward contracts to exchange a set amount of dollars per year.

Q.1523 The valuation of commodity forward contracts is much more complex compared to that of financial assets such as currencies or stock indices because these commodity-based contracts do not have well-defined income flows and most of the time do not make monetary payments. Rather, items are consumed giving an implied benefit called convenience yield, which represents:

A. the quantifiable disadvantage to owning the commodity rather than buying the futures contract.

B. the quantifiable advantage to owning the commodity rather than buying the futures contract.

C. the addition of the risk-free rate and the storage cost.

D. the cost of storage cost from holding the commodity.

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