Module Quiz 4.1 - Answers

Question 1

In backtesting a value at risk (VaR) model that was constructed using a 97.5% confidence level over a 252-day period, how many exceptions are forecasted?

A) 2.5.

B) 3.7.

C) **6.3.** ✓

D) 12.6.

Explanation

$(1 - 0.975) \times 252 = 6.3$

(LO 4.c)

Question 2

Unconditional testing does not reflect the:

A) size of the portfolio.

B) number of exceptions.

C) confidence level chosen.

D) **timing of the exceptions.** ✓

Explanation

Unconditional testing does not capture the timing of exceptions. (LO 4.d)

Question 3

Which of the following statements regarding verification of a VaR model by examining its failure rates is false?

A) The frequency of exceptions should correspond to the confidence level used for the model.

B) According to Kupiec (1995), we should reject the hypothesis that the model is correct if the log-likelihood ratio (LR) > 3.84.

C) **Backtesting VaR models with a higher probability of exceptions is difficult because the number of exceptions is not high enough to provide meaningful information.** ✓

D) The range for the number of exceptions must strike a balance between the chances of rejecting an accurate model (a Type I error) and the chances of failing to reject an inaccurate model (a Type II error).

Explanation

Backtesting VaR models with a *lower probability of exceptions* is difficult because the number of exceptions is not high enough to provide meaningful information. (LO 4.d)

Question 4

A risk manager is backtesting a sample at the 95% confidence level to see if a VaR model needs to be recalibrated. He is using 252 daily returns for the sample and discovered 17 exceptions. What is the *z*-score for this sample when conducting VaR model verification?

A) 0.62.

B) **1.27.** ✓

C) 1.64.

D) 2.86.

Explanation

The *z*-score is calculated using x = 17, p = 0.05, c = 0.95, and N = 252, as follows:

$$z = \frac{17 - 0.05(252)}{\sqrt{0.05(0.95)252}} = \frac{17 - 12.6}{\sqrt{11.97}} = \frac{4.4}{3.4598} = 1.27$$

(LO 4.c)