

CA FINAL

RISK MANAGEMENT

IN-HOUSE

CASE STUDY SERIES

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Case Study 9 Answers

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Hiram Life (Hiram)

MULTIPLE CHOICE QUESTIONS

1. **C is correct.**

The Monte Carlo simulation method can accommodate virtually any distribution, an important factor given the increased frequency of large daily losses. This method can also more easily accommodate the large number of portfolio holdings. The Monte Carlo method allows the user to develop her own forward-looking assumptions about the portfolio's risk and return characteristics, unlike the historical simulation method, which uses the current portfolio and re-prices it using the actual historical changes in the key factors experienced during the look-back period. Given the limited return history for infrastructure investments and Hamilton's expectations for higher-than-normal volatility, the historical simulation method would be a suboptimal choice.

2. **C is correct.**

Conditional VaR is a measure of tail risk that provides an estimate of the average loss that would be incurred if the VaR cutoff is exceeded.

3. **C is correct.**

A hypothetical scenario analysis allows the risk manager to estimate the likely effect of the scenario on a range of portfolio risk factors. A sovereign ratings downgrade would affect Hiram's India equity and corporate bond exposures as well as the government bond exposure. In addition, the assumptions used in constructing the scenario analysis can specifically address the effect of a need to sell large position sizes under decreased liquidity conditions resulting from a ratings downgrade. VaR alone does not accurately reflect the risk of large position sizes, which may be difficult to trade.

4. C is correct.

A hypothetical scenario analysis allows Hamilton to estimate the direct effect of a ratings downgrade on the portfolio's government bond holdings and the resulting need to sell a number of the portfolio's holdings because they no longer meet the ratings guidelines. VaR alone does not accurately reflect the risk of large position sizes, which may be difficult to trade. The hypothetical scenario analysis will also highlight the effect of increased economic turmoil on all of the portfolio's exposures, not only the government bond exposures.

5. B is correct.

The VaR is derived as follows:

$$\text{VaR} = [(E(R_p) - 2.33\sigma_p)(-1)](\text{Portfolio value})$$

where

$$E(R_p) = \text{Annualized daily return} = (0.00026 \times 250) = 0.065$$

$$250 = \text{Number of trading days annually}$$

$$2.33 = \text{Number of standard deviations to attain 1\% VaR}$$

$$\sigma_p = \text{Annualized standard deviation} = (0.0051 \times \sqrt{250}) = 0.079215$$

$$\text{Portfolio value} = \text{CAD } 260,000,000$$

$$\text{VaR} = -(0.065 - 0.184571) \times \text{CAD } 260,000,000 = \text{CAD } 31,088,460$$

6. B is correct.

Given the large fixed-income exposure in the LICIA portfolio, examining the portfolio duration more closely would be prudent. Duration is the primary sensitivity exposure measure for fixed-income investments.