金程教育®
GOLDEN FUTURE

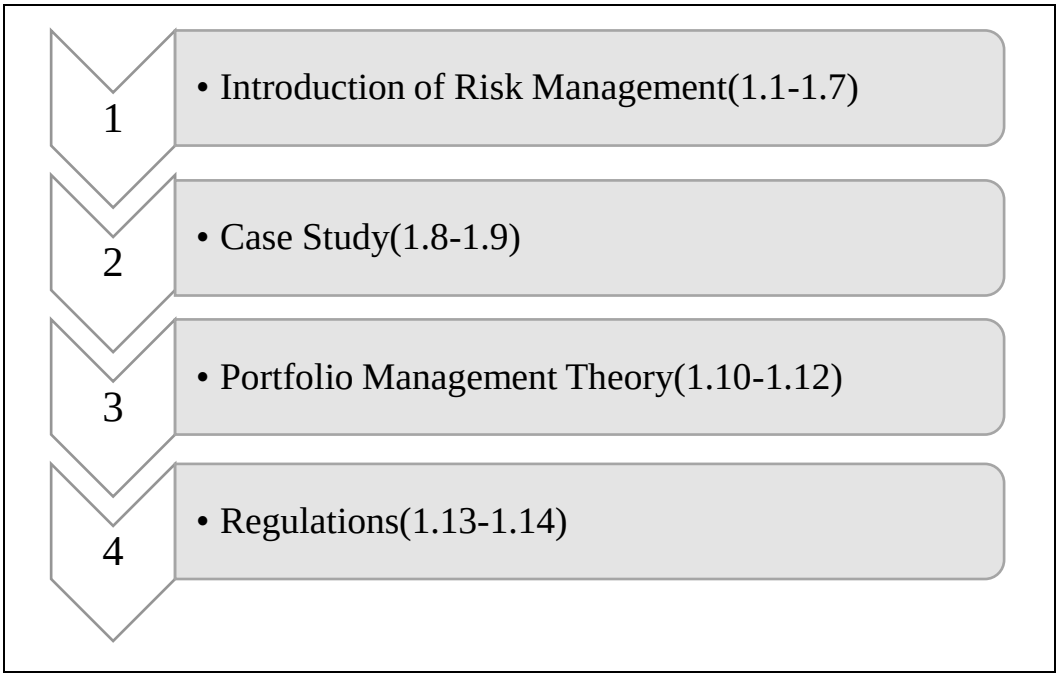
2024 FRM Part I

百题巅峰班

风险管理基础

2024 年 3 月

1. Fundamentals of Risk Management



1.1. Types of Risk

1.1.1. 重要知识点

1.1.1.1. Types of Risk

- **Market Risk**
  - Interest rate risk
  - Equity price risk
  - Foreign exchange risk
  - Commodity price risk
- **Credit Risk:**
  - Default risk
  - Bankruptcy risk
  - Downgrade risk
  - Settlement risk
- **Liquidity Risk**
- **Operational Risk**
  - Legal and Regulatory Risk
- **Business Risk**
- **Strategic Risk:**
- **Reputation Risk**
- **Systemic Risk**

1.1.2. 基础题

Q-1. You are having lunch with a client who suddenly asks you, "I noticed that you studied risk. To me, risk is when bad stuff can happen. Can you tell me, what is your definition of risk?" As far as the financial risk manager (FRM) is concerned--at least among the following potential responses to your client's question--which of the following definitions of risk is BEST?

A. Risk is the source or cause of a financial loss or cost.

B. Risk is a condition that increases the probability of a loss.

C. Risk is the size of a loss or cost: if a cost is greater, then its risk is greater.

D. Risk is the variability of adverse outcomes that are unexpected.

Q-2. Match the following events to the corresponding risk type.

1. A rogue trader within an institution.
2. Stock XYZ decreases in price due to a market crisis.
3. Using a put option to hedge an equity exposure.
4. Counterparty sues bank to avoid meeting its obligations.

A. 1:business risk. 2: basis risk. 3: strategic risk. 4: credit risk.

B. 1: business risk. 2: market risk. 3:basis risk. 4: credit risk.

C. 1:operational risk. 2: equity price risk. 3: basis risk. 4: legal risk.

D. 1:operational risk, 2: basis risk. 3: credit risk. 4: legal risk.

Q-3. Jennifer Durrant is evaluating the existing risk management system of Silverman Asset Management. She is asked to match the following events to the corresponding type of risk. Identify each numbered event as a market risk, credit risk, operational risk, or legal risk event.

1. Insufficient training leads to misuse of order management system.
2. Credit spreads widen following recent bankruptcies.
3. Option writer does not have the resources required to honor a contract.
4. Credit swaps with counterparty cannot be netted because they originated in multiple jurisdictions.

A. 1: legal risk. 2: credit risk. 3: operational risk. 4: credit risk

B. 1: operational risk. 2: credit risk. 3: operational risk. 4: legal risk

C. 1: operational risk. 2: market risk. 3: credit risk. 4: legal risk

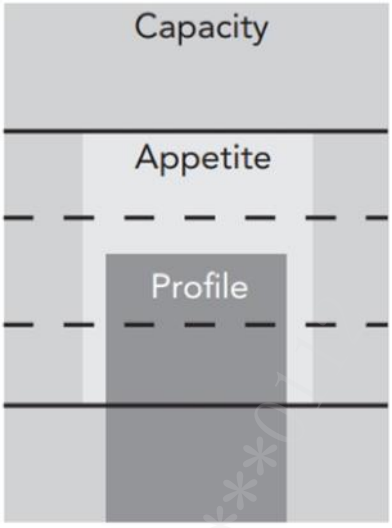
D. 1: operational risk. 2: market risk. 3: operational risk. 4: legal risk

1.2. Risk Treatment

1.2.1. 重要知识点

1.2.1.1 Risk Treatment: There are four possibilities for managing risk:

- **Risk avoidance:** Risks that are not congruent with stated policy should be avoided.
- **Risk transfer:** Risks that can be transferred to a third party.
- **Risk mitigate:** Risks can be mitigated by reducing exposure, frequency, and severity.
- **Risk retention:** The risk is can be retained within the firm 's risk appetite.



Risk appetite as a metric.

1.2.2. 基础题

Q-4. Krista Skujins, FRM, is the CFO of a manufacturing firm. She is currently in the process of diversifying the firm's investment portfolio by varying the correlations and asset classes among securities. Diversification is best characterized as which of the following risk treatments?

A. Risk avoidance
B. Risk transfer
C. Risk retention
D. Risk mitigate

Q-5. Which of the following statements is correct regarding the risk appetite?

A. The risk appetite should set above the firm's total risk bearing capacity, and below the risk profile.

B. The risk appetite should set above the firm's total risk bearing capacity, and also above the risk profile.

C. The risk appetite should set below the firm's total risk bearing capacity, and above the risk profile.

D. The risk appetite should set below the firm's total risk bearing capacity, and also below the risk profile.

Q-6. A start-up company is undergoing a series of operational changes. The company expects to receive a round of equity capital to finance its growth strategies. A risk manager at the company is evaluating the risk of the company as well as the company's new capital structure. The manager notes that the company has decided to switch its business focus to riskier projects upon receiving the equity funding.

Which of the following is most likely correct for the manager to conclude once the funding completes and the new projects are undertaken?

A. The company's risk capacity will decrease and its risk appetite will increase.

B. The company's risk capacity will increase and its risk appetite will decrease.

C. Both the company's risk capacity and risk appetite will remain the same.

D. Both the company's risk capacity and risk appetite will increase.

Q-7. The newly hired CFO of a publicly traded computer manufacturing company is assessing the concerns and motivations of different stakeholder groups. The CFO focuses on the perspectives of these stakeholders on the firm's hedging strategies. Which of the following statements is correct?

A. If the firm's equity investors hold a well-diversified portfolio, they would typically prefer that the firm hedge risks specific to the computer industry.

B. Debt investors would typically prefer that the company use hedging strategies to increase the stability of its revenue stream.

C. Both equity and debt investors would typically prefer that the firm not hedge the foreign exchange risk of long-term contracts with international customers.

D. Equity investors would typically not reward the firm for using hedging to reduce its tax exposure over a multi-year period.

Q-8. A risk manager at a trading firm is assessing the strategies proposed by an analyst to hedge several positions in the firm's trading portfolio. The risk manager notes that the analyst recommends the use of exchange-based derivatives to hedge most of the positions. Which of the following is an advantage of using exchange-based derivatives

for hedging?

A. Exchange-based derivatives can be traded without incurring transaction costs.

B. Exchange-based derivatives offer flexibility in terms of customizing the hedging instrument to match the position that the firm wants to hedge.

C. Exchange-based derivatives are typically more effective in reducing basis risk in a hedging transaction compared to bilateral OTC derivatives.

D. Exchange-based derivatives can minimize counterparty credit risk through the use of netting and margin requirements.

1.3. Primitive Risk Factors and Tail Risk

1.3.1. 重要知识点

1.3.1.1. Distinguish between expected loss and unexpected loss and provide examples of each. Interpret the relationship between risk and reward and explain how conflicts of interest can impact risk management.

- **Expected Loss(EL):** EL=EAD×LGD×PD for credit risk
- **Unexpected Loss(UL):** UL= VaR - EL
- **Risk adjusted return on capital (RAROC):** RAROC = reward/risk, $\text{RAROC} = \frac{\text{After Tax Risk-Adjusted Return(RAR)}}{\text{Economic Capital(EC)}}$
- RAROC should be higher than the cost of equity capital or the bank's equity (i.e., the hurdle rate or minimum return on equity capital required by the shareholders to be fairly compensated for risk)

1.3.2. 基础题

Q-9. According to GARP, one of the building blocks in risk management is a proper understanding of the difference between expected loss, unexpected loss, and extreme risk; also known as tail risk. In regard to this building block, which of the following statements is TRUE?

A. Effective risk management should reduce a credit portfolio's expected loss (EL) to approximately zero.

B. Expected loss is a product of (i) the probability of the risk event occurring; (ii) the severity of the loss if the risk event occurs, and (iii) the expected recovery rate.

C. While expected loss (EL) is a function of default correlation, unexpected loss (UL) is NOT influenced by portfolio granularity.

D. Although banks theoretically do not need to set aside provisions when loan products are accurately priced, in realistic practice, banks should provision for expected losses.

Q-10. About tail risk, GARP observes, "Some risk events have a diabolical side that seems designed to outwit the human mind. This may be because such events are very rare and extreme or they arise from unobserved structural changes in a market." Which of the following statements about tail risk is TRUE?

A. Extremely rare events can happen even if the system is structurally stable.

B. The problem with tail risk is that we lack statistical techniques to help us make the tails visible.

C. Structural change by definition impacts neither expected loss nor unexpected loss nor tail risk.

D. The risk manager can approach tail risk in financial markets in the same way that she would approach a natural or mechanical system.

Q-11. One of the risk management building blocks is the need to balance risk and reward. Specifically, GARP says, "Economic capital provides the firm with a conceptually satisfying way to balance risk and reward. For each activity, firms can compare the revenue and profit they are making from an activity to the amount of economic capital required to support that activity." Each of the following statements is true about RAROC EXCEPT which is inaccurate?

A. For an activity to increase shareholder value, its RAROC should be higher than the cost of equity capital.

B. Four applications of RAROC include business comparison, investment analysis, pricing strategies, and risk management cost/benefit analysis.

C. Advantages of RAROC include (i) it has one universal regulatory definition (without credible variants), such that benchmarking against peers is easy; and (ii) it is easy to implement in practice.

D. If RAROC's denominator is economic capital, which is typical, then its numerator should be an after-tax risk-adjusted expected return where the risk-adjusted refers to an adjustment for expected losses.

Q-12. A risk manager at a pension fund is analyzing the risk profile of several of the fund's portfolios. The portfolios are invested in different asset classes and have the same current market value. Which of the following portfolios would likely have the highest potential level of unexpected loss during a sharp broad-based downturn in financial markets?

A. A portfolio of US Treasury notes with 2 to 5 years to maturity

B. A portfolio of long stock positions in an international large cap stock index combined with

long put options on the same index

C. A portfolio of mezzanine tranche MBS structured by a large regional bank

D. A short position in futures for industrial commodities such as copper and steel

Q-13. A credit risk analyst is analyzing an individual loan. The exposure amount at default of this loan is assumed to be $10 million. Based on the historical data, the analyst has estimated the following:

- The probability of default is 5%.
- The loss given default (in dollar) is $7 million.

Further, the analyst has computed the Value-at-Risk (VaR) for this loan, which equals $2 million. What is the expected loss and unexpected loss of this loan?

A. The expected loss is $350,000, while the unexpected loss is $2,000,000.

B. The expected loss is $350,000, while the unexpected loss is $1,650,000.

C. The expected loss is $700,000, while the unexpected loss is $2,000,000.

D. The expected loss is $700,000, while the unexpected loss is $1,650,000.

1.4. Corporate Risk Governance

1.4.1. 重要知识点

1.4.1.1. Corporate Risk Governance

- The risk policy committee within the Board of Director should have **acceptable, desirable, and best practices** surrounding the establishment of the committee.
- Its purpose, composition, membership qualifications, committee chair, appointment, remuneration, meetings, attendance and notice, reporting to the Board and shareholders, evaluation, authority and resources, responsibilities involving policies and procedures, and responsibilities involving specific risk reviews.
- **The board should (Basic functions)**
  - Look after the interests of shareholders (gatekeeper).
  - Be responsible for the concerns of other stakeholders (debtholders and employees).
  - Oversee executive management and alert for any conflict of interests between the management and stakeholders (agency problems).
  - Separate the role of the CEO and the chairman of the board.
- **The board should (Advanced functions)**
  - Decide appropriate risk appetite.
  - Assess firm's risk management systems and procedures.

- Ensure major transactions are consistent with the risk authorized.
- Keep the disclosure adequate and transparent.
- Balance the risk and rewards.
- Take the ultimate responsibility.
- Be trained on risk issues.

1.4.2. 基础题

Q-14. Which of the following statements regarding corporate risk governance is correct?

A. Management of the organization is ultimately responsible for risk oversight.

B. A risk committee is useful for enforcing the firm's risk governance principles.

C. Effective risk governance requires multiple levels of accountability and authority

D. The point of risk governance is to minimize the amount of risk taken by the organization.

Q-15. Firms commonly incentivize their management to increase the firm's value by granting managers securities tied to the firm's stock. Some securities, however, can reduce managerial incentives to manage risk within the firm. Which is likely the best example of this type of security?

A. Deep in-the-money call option on the firm's stock

B. At-the-money call option on the firm's stock

C. Deep out-of-the-money call option on the firm's stock

D. Long position in the firm's stock

Q-16. An ERM manager at a large financial institution is meeting with a risk consultant on the subject of improving the firm's risk culture framework. The risk consultant uses examples to describe the elements of a strong risk culture. Which of the following is appropriate for the consultant to mention as an example?

A. A compensation plan that is developed based on the business structure of a startup company in the industry

B. A weekly firm-wide meeting in which managers of each business unit report their work progress

C. A company culture that encourages resolutions of risk control violations to be made exclusively within business units

D. A flexible risk management style that more easily accommodates activities that are likely to result in a profit

Q-17. Unlike natural systems, human systems are run by intelligent participants that can react

to change in a self-reflective or even a calculating manner. This type of behavior is true inside the firm as well, and this is one reason many financial firms employ the so-called three lines of defense. Which of the following statements incorrectly describes the concept of three lines of defense?

A. The first line is the business line, which generates, owns, and manages risks.

B. The second line is the risk managers, who specialize in the risk management and day-to-day oversight.

C. The third line is the periodic independent oversight and assurance, such as an external audit.

D. The safeguards of three lines of defense do not always work, because risk management systems always have loopholes and become obsolete quickly.

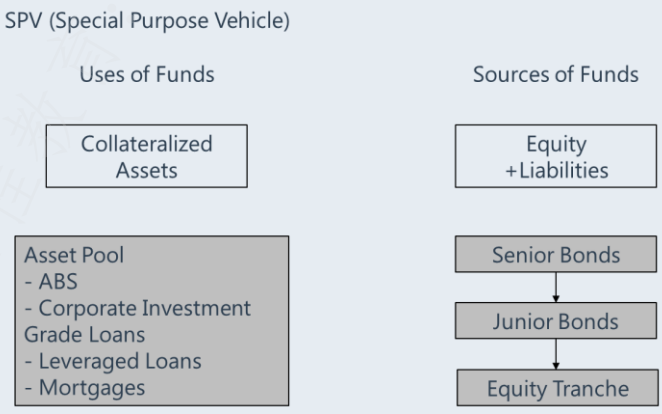
1.5. Credit Risk Transfer Mechanisms

1.5.1. 重要知识点

1.5.1.1. Risk Transfer Tools

- Traditional transfer tools of credit risk include requiring collaterals, purchasing insurance from third-party counterparties, netting of exposures to counterparties, marking to market / margining, termination by a set of trigger events and reassignment of a credit exposure to another party.
- Credit derivatives create new transfer strategies.
  - Forward
  - Futures
  - Swap
  - Option
  - Swaption

1.5.1.2. The Mechanics of Securitization



1.5.2. 基础题

Q-18. Transferring risk to a third party includes

A. Insurance contracts

B. Financial derivatives

C. securitization

D. All of the above

1.6. Enterprise Risk Management

1.6.1. 重要知识点

1.6.1.1. Role and Responsibilities of CRO

- Providing the overall leadership, vision, and direction for enterprise risk management;
- Establishing an integrated risk management framework for all aspects of risks across the organization;
- Developing risk management policies, including the quantification of the firm's risk appetite through specific risk limits;
- Implementing a set of risk indicators and reports, including losses and incidents, key risk exposures, and early warning indicators;
- Allocating economic capital to business activities based on risk, and optimizing the company's risk portfolio through business activities and risk transfer strategies;
- Communicating the company's risk profile to key stakeholders such as the board of directors, regulators, stock analysts, rating agencies, and business partners;
- Developing the analytical, systems, and data management capabilities to support the risk management program.

1.6.2. 基础题

Q-19. Which of the following statements regarding the responsibilities of the chief risk officer (CRO) is least accurate?

A. The CRO should provide the vision for the organization's risk management.

B. In addition to providing overall leadership for risk, the CRO should communicate the organization's risk profile to stakeholders.

C. Although the CRO is responsible for top-level risk management, he is not responsible for the analytical or systems capabilities for risk management.

D. The CRO may have a solid line reporting to the CEO or a dotted line reporting to the CEO

and the board.

Q-20. A board of directors is evaluating the implementation of a new ERM program at an asset management company. Which statement below is consistent across the various current definitions of an ERM program and most appropriate to be included in the company's ERM definition and goals?

A. The ERM program should reduce costs by transferring or insuring most of the company's major risk exposures.

B. The major goal of the new ERM program should be to reduce earnings volatility.

C. The ERM program should be managed separately from the operational side of the company.

D. The ERM program should provide an integrated strategy to manage risk across the company as a whole.

Q-21. The board of directors of a growing asset management company has recommended that the firm establish an ERM framework. Which of the following represents a key benefit that the firm will likely attain after establishing an ERM framework?

A. Allowing the company to determine and make use of a higher risk appetite.

B. Finding the optimal reporting methodology for each risk function.

C. Improving the top-down communication and coordination in the company.

D. Taking advantage of the new opportunities that create value on a standalone basis.

1.7. Risk Appetite Frameworks

1.7.1. 重要知识点

1.7.1.1. Risk Appetite Frameworks

- Risk appetite is the amount of risk, on a broad level, an entity is willing to accept in pursuit of value. It reflects the entity's risk management philosophy, and in turn influences the entity's culture and operating style.
- There must be a logical relationship between the firm's risk appetite and its business strategy. As a result, business strategy planning meetings require input from the risk management team right from the outset to ensure the consistency between risk appetite and business strategy.
- The risk appetite is set well below the firm's total risk bearing capacity, and above the amount of risk the firm is exposed to currently (labeled here as the firm's risk profile).

1.7.2. 基础题

Q-22. Which of the following tasks regarding risk appetite would be reasonably performed by an organization's Board of Directors?

I. Develop the organization's risk appetite statement.

II. Determine if the risk appetite may cause risks in other areas of the organization.

A. I only

B. II only

C. Both I and II

D. Neither I nor II

Q-23. Which of the following statements regarding risk appetite and risk tolerance is correct?

I. Risk appetite directly impacts the allocation of resources.

II. Risk tolerance is a measure of an organization's ability to take risk.

A. I only

B. II only

C. Both I and II

D. Neither I nor II

Q-24. Which of the following statements is least likely a corporate governance best practice for a board of directors? The board of directors should:

A. Consist of a majority of independent members.

B. Protect the interests of debt holders.

C. Maintain independence from management.

D. Appoint a chief executive officer (CEO) to serve as chairman of the board.

Q-25. Dave Cook, a risk manager with Forest Investments, is examining the risk-taking implications for his bank from taking too little or too much risk. He knows banks need to take on an optimal amount of risk in order to maximize shareholder value while still satisfying regulator constraints. Which of the following statements most likely represents an outcome from taking on too little risk? If the bank takes on too little risk:

A. This action may increase the value of the bank.

B. This action may impair the bank's ability to provide safe and liquid investments to customers.

C. The bank may fail to capitalize on enough profitable opportunities, which may generate suboptimal returns.

D. The bank may become distressed, which could result in losses for counterparties in the

event that the bank defaults on unsecured obligations.

Q-26. A growing regional bank has added a risk committee to its board. One of the first recommendations of the risk committee is that the bank should develop a risk appetite statement. What best represents a primary function of a risk appetite statement?

A. To quantify the level of variability for each risk metric that a firm is willing to accept.

B. To state specific new business opportunities that a firm is willing to pursue.

C. To assign risk management responsibilities to specific internal staff members.

D. To state a broad level of acceptable risk to guide the allocation of the firm's resources.

1.8. Financial Disasters

1.8.1. 重要知识点

1.8.1.1. Interest Rate Risk

- 1980s Savings and Loan Crisis in the US
  - Firms should manage their balance sheet to ensure that effect of interest rate movement on assets remains correlated with the effect on liabilities.

1.8.1.2. Funding Liquidity Risk

- Liquidity Crisis at Lehman Brothers
- Liquidity Crisis at Continental Illinois
- Northern Rock-Liquidity and Business Models

1.8.1.3. Implementing Hedging Strategies

- Metallgesellschaft Case
  - Stack-and-roll hedging strategy (Long futures)

1.8.1.4. Model Risk

- Niederhoffer Case
  - Wrote uncovered deep out-of-the-money put options on the S&P 500 Index and collected the option premiums
- LTCM
  - Relative value strategies: arbitraging price difference among similar securities and profiting when the prices converged.
  - Credit spread: betting that the credit spread tended to revert to average historical levels.
  - Equity volatility: betting that the volatility on equity options tended to revert to long-term average levels
- The London Whale
  - Massive bet on a complex set of synthetic credit derivatives

- Changed valuation methodology and mismarked its books

1.8.1.5. Rogue Trading and Misleading Reporting

- Barings (Nick Leeson)
  - Selling straddles on the Nikkei 225: selling calls and puts.
  - Arbitraging price differences on Nikkei 225 futures contracts that were trading on different exchanges: long-long futures position on both exchanges in hope of profiting from an increase in the Nikkei 225.

1.8.1.6. Financial Engineering and Complex Derivatives

- Bankers Trust
  - BT offered P&G and Gibson a probable but small reduction in funding expenses in exchange for a potentially large loss.
  - Banks should match the degree of complexity of trades to the degree of financial sophistication of customers.
- Orange County
- Sachsen Landesbank

1.8.1.7. Reputational Risk

- Volkswagen Emission Cheating Scandal

1.8.1.8. Corporate Governance

- Enron
  - Senior management acted in their own self-interest.
  - The board failed to fulfill its fiduciary duties.
  - Fraudulent accounting practices.

1.8.1.9. Cyber Risk

- The SWIFT Case
  - Hackers used the SWIFT network to steal USD 81 million from the account of Bangladesh Bank.
  - The database record was deleted.

1.8.2. 基础题

Q-27. The collapse of Long Term Capital Management (LTCM) is a classic risk management case study. Which of the following statements about risk management at LTCM is correct?

A. LTCM had no active risk reporting.

B. At LTCM, stress testing became a risk management department exercise that had little influence on the firm's strategy.

C. LTCM's use of high leverage is evidence of poor risk management.

D. LTCM failed to account properly for the illiquidity of its largest positions in its risk

calculations.

Q-28. Long-Term Capital Management(LTCM) experienced financial difficulty in the late 1990s. Which of the following statements is false regarding their troubles?

A. The amount of their positions in swaps was very large, but due to offsetting positions, the amount of their risk was in theory very small.

B. LTCM required their investors to invest for three years, thereby increasing funding risk.

C. LTCM obtained financing through repurchase agreements at very favorable terms.

D. Due to the size of their positions, LTCM could not liquidate their assets without selling at large discounts.

Q-29. Which of the following is a common attribute of the collapse at both Metallgesellschaft and Long-Term Capital Management (LTCM)?

A. Cash flow problems caused by large mark to market losses.

B. High leverage.

C. Fraud.

D. There are no similarities between the causes of the collapse at Metallgesellschaft and LTCM.

Q-30. In late 1993, Metallgesellschaft reported losses of approximately USD 1.5 billion in connection with the implementation of a hedging strategy in the oil futures market. In 1992, the company had begun a new strategy to sell petroleum to independent retailers, on a monthly basis, at fixed prices above the prevailing market price for periods of up to 5 and even 10 years. At the same time, Metallgesellschaft implemented a hedging strategy using a large number of short-term derivative contracts such as swaps and futures on crude oil, heating oil, and gasoline on several exchanges and markets. Its approach was to buy on the derivatives market exposure to one barrel of oil for each barrel it had committed to deliver. Because of its choice of a hedge ratio, the company suffered significant losses with its hedging strategy when oil market conditions abruptly changed to:

A. Contango, which occurs when the futures price is above the spot price.

B. Contango, which occurs when the futures price is below the spot price.

C. Normal backwardation, which occurs when the futures price is above the spot price.

D. Normal backwardation, which occurs when the futures price is below the spot price.

Q-31. Which risk is a common attribute of the failure Enron and The London Whale?

A. Liquidity risk.

B. Foreign currency risk.

C. Commodity risk.

D. Governance risk.

Q-32. Which of the following are examples of model risk illustrated in the Long-Term Capital Management case?

I. Poor management oversight.

II. Financial reporting standards.

III. Ignoring autocorrelation of economic shocks.

IV. Underestimating correlations among asset classes during economic crises.

A. II, III, and IV only

B. III and IV only

C. I, II, III, and IV

D. I only

Q-33. All of the following are reasons that Nick Lesson engaged in aggressive speculative trading in the Barings Bank collapse except:

A. He was attempting to recover previous trading losses.

B. Barings' lack of risk management oversight.

C. Barings' risk management models were flawed.

D. His authority over settlement operations allowed him to hide trading losses.

Q-34. In the case of Barings Bank (Barings), Nick Leeson incurred huge trading losses. Which of the following statements correctly describes one of the factors that led to the bankruptcy of Barings?

A. Barings had insufficient liquidity to cover marked to market losses.

B. Leeson used a long straddle strategy on the Nikkei 225.

C. Leeson held speculative double short positions in the market for Nikkei 225 futures contracts.

D. There was ambiguity concerning who was responsible for performing specific oversight functions.

Q-35. A newly hired risk analyst at a bank is studying historical cases of financial disasters and their causes to learn how financial risks can arise in practice. The analyst focuses on the example of Barings Bank. Which of the following statements is correct for the analyst to make regarding the collapse of Barings Bank?

A. A rogue trader at Barings Bank convinced the bank's risk controllers that large

unauthorized trades were necessary to hedge the bank's portfolios.

B. Management of Barings Bank failed to investigate the high level of reported profits that were associated with supposedly low-risk trading strategies.

C. Traders at Barings Bank traded primarily in OTC foreign currency swaps that allowed the bank to delay cash payments on losing trades.

D. Management of Barings Bank was not aware of the losses incurred by the bank until clients reported unusual losses on trades that were booked to their accounts.

Q-36. Barings was forced to declare bankruptcy after reporting over USD 1 billion in unauthorized trading losses by a single trader, Nick Leeson. Which of the following statements concerning the collapse of Barings is correct?

A. Leeson avoided reporting the unauthorized trades by convincing the head of his back office that they did not need to be reported.

B. Management failed to investigate high levels of reported profits even though they were associated with a low-risk trading strategy.

C. Leeson traded primarily in OTC foreign currency swaps which allowed Barings to delay cash payments on losing trades until the first payment was due.

D. The loss at Barings was detected when several customers complained of losses on trades that were booked to their accounts.

Q-37. Which is true about the issue between Bankers' Trust and Procter & Gamble (P&G)?

A. P&G was a new client to Banker's Trust in 1994

B. The transaction at issue was a complex interest-rate derivative

C. The intent of P&G was to implement a tailored hedge

D. Banker's Trust asserted its fiduciary role with respect to P&G

Q-38. Allen is studying cases of financial disasters. According to his study, lessons learned from Bankers' Trust included each of the following EXCEPT for:

A. Complex transaction make comparison shopping difficult and make clients more dependent on advisor.

B. Provide a means for customers to obtain price quotes from an area independent of the front office.

C. People and firms should be cautious about communications (e.g., email) that can later be made public.

D. Some transactions are sufficiently complex that their costs outweigh their benefits.

案例核心是交易不透明、误导客户等，而非讨论交易本身“成本是否超过收益”

Q-39. In September 2015, the United States Environmental Protection Agency (EPA) announced that Volkswagen had programmed certain emissions controls on its diesel engines to be activated only during regulatory testing but not during real-world driving. Thus, while nitrogen oxide levels would meet U.S. standards during regulatory testing, they greatly exceeded these standards when the cars were actually on the road. From 2009 through 2015, Volkswagen put this programming in place in over ten million cars worldwide (500,000 in the United States alone). The scandal unfolded with significant financial repercussions and massive reputational damage to the company. Its reputation, particularly in the important US market, took a severe hit. The reputational effect extended beyond the company itself as German government officials expressed concerns that the value of the imprimatur 'Made in Germany' would be diminished because of Volkswagen's actions. Which of the following most accurately summarizes the Volkswagen emissions case study?

A. Volkswagen deliberately programmed emission controls to activate only during regulatory testing but not during real-world driving.

B. Volkswagen did not conduct adequate quality assurance (QA) on its emission controls and consequently, a meaningful percentage of them failed during real-world driving.

C. The Volkswagen case study illustrates how reputation risk can materialize despite the good intentions of managers who disclose problems immediately and cooperate with regulators.

D. Though Volkswagen's credibility was largely affected by the scandal, the share price of the company didn't fall too much as the scandal unfolded.

Q-40. Which of the following statements about Enron Scandal are/is true?

I. Enron had used hundreds of special purpose vehicle to hide flaws in its actual financial performance. As a result, Enron's balance sheet understated its liabilities and overstated its equity, and its earnings were overstated.

II. Enron built a physical asset and then immediately declare a projected mark-to-market profit on its books, ~~but didn't do this when it had not yet made any money from the physical asset.~~

III. Enron outsourced its audit function to Arthur Andersen. And Andersen ~~neither failed~~ to catch nor explicitly approved many of fraudulent accounting practices that led to Enron's collapse.

A. I, II

B. II, III.

C. I.

D. I, II, III.

Q-41. During the first half of 2012, J.P. Morgan Chase lost billions of dollars from an exposure to a massive credit derivatives portfolio in its office, the notorious nickname for Bruno Iksil, who assumed massive exposures (masquerading as hedges) in a large credit derivative portfolio. Which of the following BEST summarizes the root cause of the debacle?

A. Disclose the high risk assets in the SCP to reduce its Risk Weighted Assets (RWA).

B. A poor risk culture enabled by failures in corporate governance.

C. The chief investment officer (CIO) lacked the sophistication to correctly value certain credit derivatives.

D. The chief investment officer (CIO) used only one metric, value at risk (VaR), an overreliance owing to JPM's pioneering use of VaR.

Q-42. Derivatives allow investors and institutions to break apart (i.e., segment) risks. Conversely, derivatives can be used to manage risks on a joint basis. The financial engineers responsible for devising complex instruments do so to satisfy the risk-return appetites of their clients. But financial engineering is not by itself risk management, and in the world of derivatives the line between hedging and speculation can be blurry. Case studies that feature financial engineering by way of complex derivatives include Bankers Trust and the Orange County case. In regard to these financial engineering cases. Which of the following statements is false?

A. Bankers Trust (BT) proposed an overly complex swap to their clients (P&G and Gibson Greetings) but the swaps experienced colossal losses; the clients sued BT, who never recovered from the ensuing reputational damage.

B. Orange County's treasurer (Robert Citron) borrowed through the repo market to purchase inverse floating-rate notes--positions that Citron later said he did not understand--but the combination of excessive leverage and embedded interest-rate risk generated losses that ultimately forced Orange County to file for bankruptcy.

C. Firms need to understand the risks that are inherent in their business models. Senior management then needs to deploy robust policies and risk measures tying risk management, and particularly the use of derivatives, to risk appetite and overall business strategy as it has been communicated to stake holders.

D. If the purpose of the position is designated as hedging (rather than speculation) and if the hedge consists only of some combination(s) of forwards, swaps and/or options--which are the primary building blocks--then the firm can avoid problems suffered by the financial engineering case studies because the firm avoids undue sophistication.

Q-43. A risk consultant is presenting to a group of junior risk managers on how risk management failures contributed to financial disasters. The consultant focuses on the lessons learned from examining historical financial disasters in the US and around the world. Which of the following correctly describes a lesson learned from the given case?

A. The Orange County case emphasizes the importance of fully understanding complex derivative contracts before entering into them.

B. The London Whale case emphasizes the importance of recognizing that correlations can increase sharply during a global financial crisis.

C. The Northern Rock case emphasizes the importance of having a strong cybersecurity framework.

D. The LTCM case emphasizes the importance of meeting regulatory capital requirements.

Q-44. Victor Niederhoffer was a star trader who ran a very successful and well-established hedge fund. One strategy of the fund involved writing large quantities of uncovered (i.e., 'naked') deep out-of-the-money put options on the S&P 500 index and collecting the option premium. However, the strategy was undone in October 1997, and the fund's positions are liquidated by brokers. Which of the following statements correctly describe the reason of the failure of Niederhoffer's hedge fund?

A. Niederhoffer is lack of understanding of either the complex instruments he took nor the risk exposure of the fund.

B. Significant increase in interest rates pushed up the funding costs of the fund, so that the fund's profit margin became negative.

C. A combination of model risk, operational risk, and poor risk culture eventually led to the failure of Niederhoffer's hedge fund.

D. Assumptions underlying the strategy did not adequately account for the extreme tail risk that is potential in the market.

Q-45. In financial risk management, it is common to ask the "What if?" questions. To illustrate the point here, we will use the MGRM case as an example. The MGRM entered into long-term, fixed-price contracts to deliver oil products to end-user customers in 1993. In order to hedge, it implemented a dynamic hedging strategy called rolling hedge. However, since the spot oil prices fell significantly in 1993 and the oil price curve changed from backwardation to contango, the MGRM suffered a significant loss. We then consider a "What if?" question: what if the MGRM did not face any problem mentioned above (e.g., the spot prices did not fall significantly, and the price curve did not shift to contango)? What will be the MGRM's biggest worry?

A. The frequent trading as a result of stack and roll strategy will lead to higher costs, which

can severely damage the profit of the company.

B. The potential liquidity concerns arising from the futures position.

C. The basis risk imposed by rolling hedge strategy.

D. There is nothing for the MGRM to be worried.

Q-46. In the early 1990s, Orange County treasurer Robert Citron had managed to borrow $12.9 million through the repo market. The borrowed funds were then used to purchase complex inverse floating-rate notes, whose coupon payments decline when interest rates rise. However, as the Federal Reserve raised interest rates over the course of 1994, the market value of Robert Citron's positions dropped substantially. Eventually, the Orange County was forced to file for bankruptcy. There are several lessons that we have drawn from the Orange County. Which of the following statements is not one of those lessons?

A. Beware the unconstrained star performer, even when he or she has a long track record. Where there is excess reward, there is risk though it might take time to surface.

B. Risk-averse investors must tie investment objectives to investment actions by means of a strict framework of investment policies, guidelines, risk reporting and independent and expert oversight.

C. Firms need to understand the risks that are inherent in their business models, and the leverage need to be used carefully and properly.

D. Banks should match the degree of complexity of trades to the degree of financial sophistication of customers. They should also be cautious about how to use any form of communication.

1.9. Anatomy of the Great Financial Crisis of 2007-2009

1.9.1. 重要知识点

1.9.1.1. Central Banks to The Rescue

- Creating long-term lending facilities against high quality collateral
- Opening the discount window24 to investment banks and securities firms
- Providing funds to be lent against high-quality illiquid asset-backed securities,
- Providing funds to finance the purchase of unsecured CP and ABCP
- Providing liquidity to money market funds
- Purchasing assets from Fannie Mae and Freddie Mac

1.9.2. 基础题

Q-47. Which of the following factors do not contribute to the housing bubble?

A. Tight monetary policy.
B. Financial securitization.
C. Increasing demand from foreign investors for US securities.
D. Originate-to-distribute banking model.

Q-48. Which of the following statements correctly describes the Asset-liability mismatch phenomenon during the credit crisis of 2007-2008?

A. Asset-liability maturity mismatch refers to the purchase of short-term assets through short-term financing
B. Banks use commercial paper and long-term bonds to finance the purchase of long-term assets.
C. Use short-term repurchase agreements, or commercial paper for financing long-term assets.
D. Management of asset-liability maturity mismatch does not face funding liquidity risk.

Q-49. In a report on the 2007-2009 liquidity and credit crunch, there are several concepts that describe various factors of the credit crisis. Which, of the following statements accurately defines these concepts?

A. A liquidity backstop is a temporary halt in funding liquidity to structured investment vehicles (SIVs) in order to minimize credit losses.
B. A narrowing of the bid-ask spread results in an increase in market liquidity.
C. Because of the forced sale of assets due to declining asset values, a loss spiral generates a lower new position value than a margin spiral.
D. The credit protection buyer in a credit default swap (CDS) receives cash flows from the portfolio that underlies the CDS.

Q-50. The CDS protection buyer makes periodic payments to the protection seller over the life of the contract. Which of the following statements is not a consequence of the securitization?

A. Securitization makes originating banks approve and monitor loans carefully.
B. Securitization transfers the default risk of the underlying assets to investors.
C. Securitization enabled the originating institutions offer lower interest rates on mortgages.
D. Securitization may allow institutional investors to indirectly hold assets that they are prevented from holding directly.

Q-51. A risk analyst at a growing bank is concerned about a loan exposure to a large manufacturing company which is losing significant market share in its industry. The

analyst considers the use of different credit risk transfer mechanisms, including CDS, to manage this exposure. Which of the following statements correctly describes an appropriate benefit of using CDS in this situation?

A. CDS quantify the manufacturing company's default risk and allow the bank to monitor changes in this risk on a real-time basis.

B. CDS provide an agreement to periodically revalue the loan and transfer any net value change.

C. CDS require the manufacturing company to pay back the loan in full at an earlier point in time.

D. CDS allow the bank to offset its exposure to the company with loan exposures to other manufacturing companies.

Q-52. To prevent further liquidity issues, the Federal Reserve and the U.S. government intervened in financial markets by implementing all of the following except

A. lowering interest rates.

B. bailing out major financial institutions.

C. opening the discount window to commercial banks

D. acquiring assets issued by major financial institutions.

Q-53. A junior analyst has just started working for a national banking supervisor and is training for a position as a bank examiner. As part of the training program, the analyst is asked to explain how banking regulations evolved as a result of the 2007 – 2009 financial crisis to encourage better risk governance. Which of the following correctly describes an impact of regulations that were introduced as a result of the crisis?

A. Banks were required to securitize all the mortgages they originate in order to distribute risk across financial institutions.

B. Banks were encouraged to establish an independent risk management function with access to the board of directors.

C. Proprietary trading operations were merged with traditional banking operations to provide banks better governance over their trading desks.

D. Derivatives were encouraged to be traded OTC rather than centrally cleared to provide greater transparency.

Q-54. A risk analyst is studying the history of the subprime mortgage crisis that took place in the US between 2007 and 2009. The risk analyst finds that the delinquencies of subprime mortgages rose significantly after mid-2005. Which of the following was a contributing factor for the increase in delinquencies?

A. Mortgages became increasingly over-collateralized in 2005.

B. Interest rates decreased significantly throughout 2005.

C. Many first-time home buyers paid zero down payment in 2005.

D. Housing prices began to rise sharply at the end of 2005.

Q-55. The competitive structure of the banking industry was altered dramatically during, and as the result of, the 2007-2009 crisis. Investment giants, including Bear Stearns and Merrill Lynch, were merged with banking institutions. Lehman Brothers went bankrupt. The last two major investment banks, Goldman Sachs and Morgan Stanley, were converted into bank holding companies. In July 2010, the Dodd-Frank Act was signed into law. The Act's 2,300 pages overhauled the regulation of the financial industry in the United States, aiming to improve both consumer protection and systemic stability. Which of the following statements correctly describe the issues addressed by the Act?

A. The Volcker rule launched a transparency-focused overhaul of derivatives markets regulation with the aim of helping market participants with counterparty risk.

B. All financial institutions were required to submit a 'living will' to the Federal Reserve and the Federal Deposit Insurance Corporation that lays out a corporate governance structure for resolution planning.

C. The Act instituted a radically new approach to scenario analysis and stress testing. Specifically, the Dodd-Frank Act Stress Test (DFAST) is for banks with assets above USD 10 billion, while the Comprehensive Capital Analysis and Review (CCAR) is for banks with assets above USD 50 million.

D. The orderly liquidation authority imposes a prohibition on proprietary trading, as well as the partial or full ownership/partnership of hedge funds and private equity funds by banking entities.

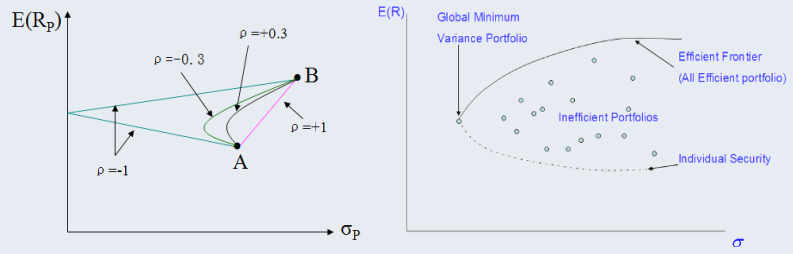
1.10. Portfolio Management Theory

1.10.1. 重要知识点

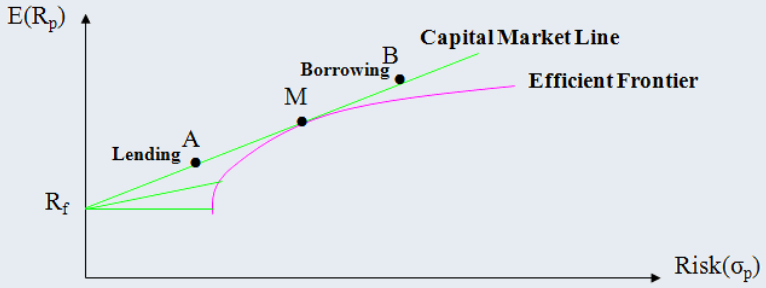
1.10.1.1. Expected return and volatility of a two-asset portfolio

$$E(R_P) = \omega_1 E(R_1) + \omega_2 E(R_2)$$

$$\sigma_P^2 = \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + 2\omega_1\omega_2 Cov_{1,2} = \omega_1^2\sigma_1^2 + \omega_2^2\sigma_2^2 + 2\omega_1\sigma_1\omega_2\sigma_2\rho_{1,2}$$



1.10.1.2. Capital Market Line (CML)



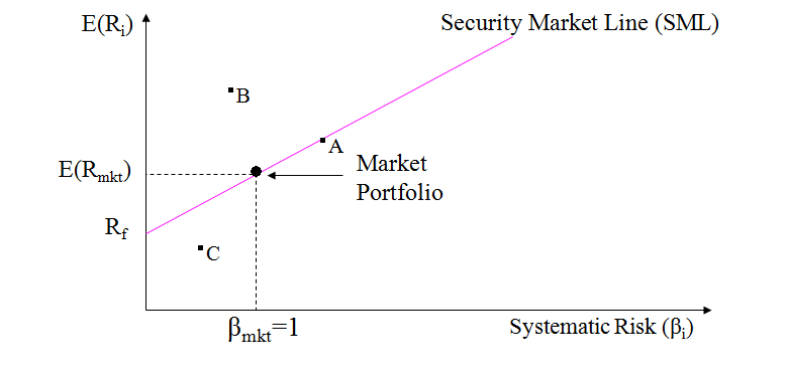
CML: $E(R_P) = R_f + [\frac{E(R_M) - R_f}{\sigma_M}]\sigma_P$

1.10.1.3. Capital Asset Pricing Model (CAPM) Assumptions

- Investors face no transaction costs when trading assets.
- Assets are infinitely divisible.
- There are no taxes; therefore, investors are indifferent between capital gains and income or dividends.
- Investors are price takers whose individual buy and sell decisions have no effect on asset prices.
- Investor's utility functions are based solely on expected portfolio return and risk.
- Unlimited short-selling is allowed.
- Investors can borrow and lend unlimited amounts at the risk-free rate.
- One-period horizon investment.
- Homogeneous expectations about the expected returns, variances.
- All assets are marketable, including human capital.

$$E(R_i) = R_f + \beta_i [E(R_M) - R_f], \ (\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \rho \frac{\sigma_i}{\sigma_M})$$

1.10.1.4. Security Market Line (SML)



1.10.1.5. Comparing the CML and the SML

- **Measure of Risk:**
  - SML: Uses systematic risk
  - CML :Uses standard deviation
- **Application:**
  - SML: Tool used to determine the appropriate expected returns for securities.
  - CML :Tool used to determine the appropriate asset allocation (percentages allocated to the risk-free asset and to the market portfolio) for the investor.
- **Definition:**
  - SML: Graph of the CAPM
  - CML :Graph of the efficient frontier
- **Slope:**
  - SML: Market risk premium
  - CML :Market portfolio Sharpe Ratio

1.10.2. 基础题

Q-56. According to the Capital Asset Pricing Model (CAPM), over a single time period, investors seek to maximize their:

A. Wealth and are concerned about the tails of return distributions.

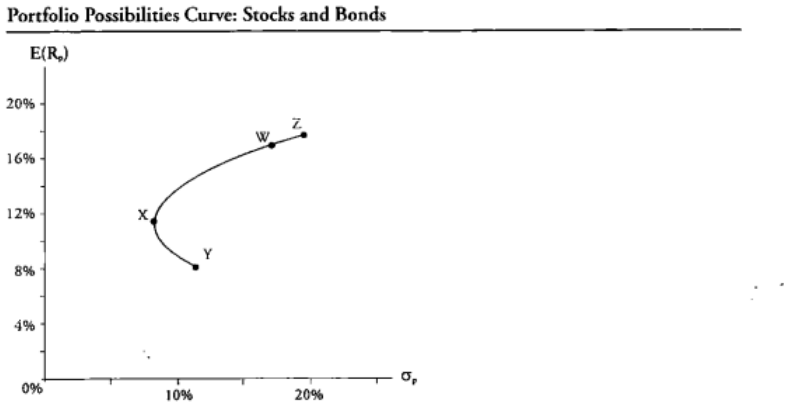
B. Wealth and are not concerned about the tails of return distributions.

C. Expected utility and are concerned about the tails of return distributions.

D. Expected utility and are not concerned about the tails of return distributions.

Use the following data to answer Questions 41 and 42.

Assume the expected return on stocks is 18% (represented by Z in the figure), and the expected return on bonds is 8% (represented by point Y on the graph).



Q-57. The graph shows the portfolio possibilities curve for stocks and bonds. The point on the graph that most likely represents a 90% allocation in stocks and a 10% allocation in bonds is Portfolio:

A. W

B. X

C. Y

D. Z

Q-58. The efficient frontier consists of the portfolios between and including:

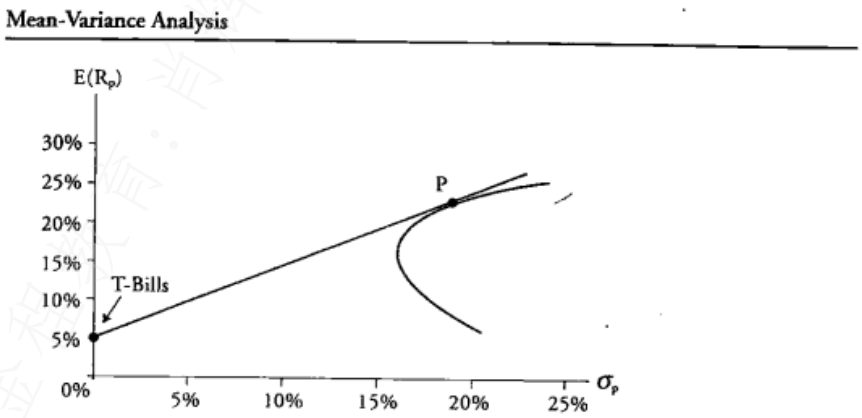
A. X and W

B. Y and Z

C. X and Z

D. Y and X

Use the following graph to answer Question



Q-59. Portfolio P in the mean variance analysis represents the tangency point between the capital market line and the portfolio possibilities curve. In this analysis, the market price of risk would be the:

A. standard deviation of Portfolio P
B. expected return on the minimum-variance portfolio
C. slope of the line connecting T-bills and Portfolio P
D. point at which the straight line intersects the expected return axis

Q-60. Suppose that the correlation of the return of a portfolio with the return of its benchmark is 0.8, the volatility of the return of the portfolio is 5%, and the volatility of the return of the benchmark is 4%. What is the beta of the portfolio?

A. 1.00
B. 0.80
C. 0.64
D. -1.00

Q-61. Patricia Franklin makes buy and sell stock recommendations using the capital asset pricing model. Franklin has derived the following information for the broad market and for the stock of the CostSave Company (CS):

- Expected market risk premium 8%
- Risk-free rate 5%
- Historical beta for CostSave 1.50

Franklin believes that historical betas do not provide good forecasts of future beta, and therefore uses the following formula to forecast beta:

Forecasted beta = 0.80 + 0.20 × historical beta

After conducting a thorough examination of market trends and the CS financial statements, Franklin predicts that the CS return will equal 10%. Franklin should derive the following required return for CS along with the following valuation decision (undervalued or overvalued):

	Valuation	**CAPM required return**
A.	overvalued	8.3%
B.	overvalued	13.8%
C.	undervalued	8.3%
D.	undervalued	13.8%

Q-62. Which of the following statements concerning the capital asset pricing model (CAPM) and the security market line (SML) is correct?

A. Beta identifies the appropriate level of risk for which an investor should be compensated.
B. Unsystematic risk is not diversifiable, so there is no reward for taking on such risk.
C. Assets with equivalent betas will always earn different returns.

D. The market risk premium is calculated by multiplying beta by the difference between the expected return on the market and the risk-free rate of return.

Q-63. The risk-free rate is 5% and the expected market risk premium is 10%. A portfolio manager is projecting a return of 12%. The portfolio has a beta of 0.7, and the market beta is 1.0. After adjusting for risk, this portfolio is expected to:

A. equal the performance predicted by the CAPM.

B. outperform the CAPM return.

C. underperform the CAPM return.

D. unable to determine based on the information provided.

Q-64. The efficient frontier is defined by the set of portfolios that, for each volatility level, maximizes the expected return. According to the capital asset pricing model (CAPM), which of the following statements are correct with respect to the efficient frontier?

i. The capital market line is the straight line connecting the risk-free asset with the zero beta minimum variance portfolio.

ii. The capital market line always has a positive slope and its steepness depends on the market risk premium and the volatility of the market portfolio.

iii. The complete efficient frontier without a risk-free asset can be obtained by combining the minimum variance portfolio and the market portfolio.

iv. The efficient frontier allows different individuals to have different portfolios of risky assets based upon their own risk aversion and forecast for asset returns.

v. The efficient frontier assumes no transaction costs, no taxes, a common investment horizon for all investors, and that the return distribution has no skewness.

A. ii, iii and v

B. i, ii and iii

C. i, iv and v

D. ii, iii and iv

Q-65. An investment advisor is analyzing the range of potential expected returns of a new fund designed to replicate the directional moves of the BSE Sensex Index but with twice the volatility of the index. The Sensex has an expected annual return of 12.3% and volatility of 19.0%, and the risk free rate is 2.5% per year. Assuming the correlation between the fund's returns and that of the index is 1, what is the expected return of the fund using the capital asset pricing model?

A. 18.5%

B. 19.0%

C. 22.1%

D. 24.6%

Q-66. Suppose the S&P 500 has an expected annual return of 7.6% and volatility of 10.8%. Suppose the Atlantis Fund has an expected annual return of 8.3% and volatility of 8.8% and is benchmarked against the S&P 500. If the risk free rate is 2.0% per year, what is the beta of the Atlantis Fund according to the Capital Asset Pricing Model?

A. 0.81

B. 0.89

C. 1.13

D. 1.23

Q-67. Which of the following statements about portfolio risk and diversification is least accurate?

A. Not all risk is diversifiable.

B. Unsystematic risk can be substantially reduced by diversification.

C. Systematic risk can be eliminated by holding securities in a well-diversified international stock portfolio.

D. None of above.

Q-68. A risk consultant is advising a pension fund to revise its asset allocation approach to be more consistent with the theory of CAPM. The consultant prepares a list of the assumptions of CAPM to support the advice. Which of the following is an assumption of CAPM?

A. There are transaction costs associated with buying and selling assets.

B. An individual investor can affect the price of a stock by buying or selling that stock.

C. Investors make their investment decisions by taking into account their personal income taxes.

D. Investors have the same expectations regarding the expected returns and the variance of returns of all assets.

Q-69. Roman, FRM, is adopting a CAPM framework in his investment strategy. The current prevailing 3-month T-bill rate is 2.4% and Roman's portfolio has a beta of 1.12. Suppose that based on new information, Roman adjusts his forecast on S&P 500's return from 8.2% to 9.0% in the model. What is the impact of this adjustment on the expected portfolio return based on the CAPM equation?

A. 0.896%.

B. 0.904%

C. 1.205%

D. 1.352%

1.11. Measure of performance

1.11.1. 重要知识点

1.11.1.1. Measure of performance

Types	Formula	Application
Sharpe Ratio	$\mathrm{SR} = \frac{\mathrm{E}(\mathrm{R_P}) - \mathrm{R_F}}{\sigma(\mathrm{R_P})}$	Applied to all portfolios and is a better method for measuring historical performance.
Treynor Ratio	$\mathrm{TR} = \frac{\mathrm{E}(\mathrm{R_P}) - \mathrm{R_F}}{\beta_P}$	For well-diversified portfolios.
Sortino Ratio	$\text{Sortino Ratio} = \frac{\mathrm{E}(\mathrm{R_P}) - \mathrm{MAR}}{\sqrt{\frac{1}{\mathrm{T}}\sum_{t=0}^{T}(\mathrm{R_{Pt}} - \mathrm{MAR})^2}}$	Return distribution is skewed to the left (for example hedge fund), but Sortino ratio is much less widely used.
Tracking Error	$\mathrm{TE} = \mathrm{R_P} - \mathrm{R_B}$ $\mathrm{TEV} = \sigma(\mathrm{R_P} - \mathrm{R_B})$	Measures the difference between a portfolio's returns and those of a benchmark.
Information Ratio	$\mathrm{IR} = \frac{\mathrm{E}(\mathrm{R_P}) - \mathrm{E}(\mathrm{R_B})}{\sigma(\mathrm{R_P} - \mathrm{R_B})}$	A measure of how well the manager has acquired and used information compared to the average manager.
Jensen's Alpha	$\mathrm{E}(\mathrm{R_P}) - \mathrm{R_F} = \alpha_P + \beta_P[\mathrm{E}(\mathrm{R_M}) - \mathrm{R_F}]$	The Jensen measure is the asset's excess return over the return predicted by the CAPM.

1.11.2. 基础题

Q-70. The market portfolio (M) contains the optimal allocation of only risky asset. Let the S_1 be the Sharpe ratio of this market portfolio. There exists a risk-free asset. Initially, an investor is fully (100%) invested in M with a portfolio Sharpe ratio of S_1. Subsequently, the investor borrows 30% at the risk-free rate, such that she is 130% invested in the

market portfolio (M) where this leverage portfolio has a Sharpe ratio of S_2。After the leverage (i.e., borrowing at the risk-free rate to invest +30% in M, is the investor still on the efficient frontier and how do the Sharpe ratios?

A. No (no longer efficient), and $S_2 < S_1$.

B. No, but $S_2 = S_1$.

C. Yes (still efficient), but $S_2 < S_1$.

D. Yes and $S_2 = S_1$.

Q-71. Assume that you are only concerned with systematic risk. Which of the following would be the best measure to use to rank order funds with different betas based on their risk-return relationship with the market portfolio?

A. Treynor ratio

B. Sharpe ratio

C. Jensen's alpha

D. Sortino ratio

Q-72. Donaldson Capital Management, a regional money management firm, manages nearly $400 million allocated among three investment managers. All portfolios have the same objective, which is to produce superior risk-adjusted returns (by beating the market) for their clients. You have been hired as a consultant to measure the performance of the portfolio managers. You have collected the following information based on the last ten years of returns.

Portfolio Manager	Mean Annualized Rate of Return	Beta	Standard Deviation of Return
a	0.18	1.35	0.24
b	0.21	1.95	0.25
c	0.24	2.10	0.22

During the same time period the average annual rate of return on the market portfolio was 13% with a standard deviation of 19%. In order to assess the portfolio performance of the above managers, you should use:

A. The Treynor measure of performance

B. The Sharpe measure of performance

C. The Jensen measure of performance

D. The Sortino measure of performance

Q-73. A high net worth investor is monitoring the performance of an index tracking fund in which she has invested. The performance figures of the fund and the benchmark

portfolio are summarized in the table below:

Year	Benchmark Return	Fund Return
2005	9.00%	1.00%
2006	7.00%	3.00%
2007	7.00%	5.00%
2008	5.00%	4.00%
2009	2.00%	1.50%

What is the tracking error volatility of the fund over this period?

A. 0.09%

B. 1.10%

C. 3.05%

D. 4.09%

Q-74. Gregory is analyzing the historical performance of two commodity funds tracking the Reuters/Jefferies-CRB Index (CRB) as benchmark. He collated the data on the monthly returns and decided to use the information ratio (IR) to assess which fund achieved higher returns more efficiently and presented his findings.

	Fund I	Fund II	Benchmark returns
Average monthly returns	1.488%	1.468%	1.415%
Average excess return	0.073%	0.053%	0.000%
Standard deviation of returns	0.294%	0.237%	0.238%
Tracking error	0.344%	0.341%	0.000%

What is the information ratio for each fund and what conclusion can be drawn?

A. IR for Fund I = 0.212, IR for Fund II = 0.155; Fund II performed better as it has a lower IR.

B. IR for Fund I = 0.212, IR for Fund II = 0.155; Fund I performed better as it has a higher IR.

C. IR for Fund I = 0.248, IR for Fund II = 0.224; Fund I performed better as it has a higher IR.

D. IR for Fund I = 0.248, IR for Fund II = 0.224; Fund II performed better as it has a lower IR.

Q-75. A portfolio manager received a report on his fund's performance. According to the report, the portfolio return was 2.5% with a standard deviation of 21% and a beta of 1.2. The risk-free rate over this period was 3.5%，the semi-standard deviation of the portfolio was 16%, and the tracking error of the fund was 2%. What is the difference between the value of the fund's Sortino ratio (assuming the risk-free rate is the minimum acceptable return) and its Sharpe ratio?

A. 0.563

B. 0.347

C. -0.053

D. -0.015

Q-76. Portfolio A has an expected return of 8%, volatility of 20%, and beta of 0.5. Assume that the market has an expected return of 10% and volatility of 25%. Also assume a risk-free rate of 5%. What is Jensen's alpha for portfolio A?

A. 0.5%

B. 1.0%

C. 10%

D. 15%

Q-77. You are analyzing a portfolio that has a Jensen's alpha of 4.75% and an actual return of 14.2%. The risk-free rate is 4.25% and the market risk premium is 6%. Based on the information provided, the beta of the portfolio is closest to:

A. 0.77

B. 0.87

C. 0.97

D. 1.07

Q-78. An analyst is evaluating the performance of a portfolio of Mexican equities that is benchmarked to the IPC Index. The analyst collects the information about the portfolio and the benchmark index shown in the table below:

Expected return on the portfolio	6.6%
Volatility of returns on the portfolio	13.1%
Expected return on the IPC Index	4.0%
Volatility of returns on the IPC Index	8.7%
Risk-free rate of return	1.5%
Beta of portfolio relative to IPC Index	1.4

What is the Sharpe ratio for this portfolio?

A. 0.036

B. 0.047

C. 0.389

D. 0.504

Q-79. You are reviewing the performance of a portfolio and have compiled the following information.

Average return over the last year	13.75%

Benchmark average return over the last year	12.36%
Standard deviation	16.90%
Beta	1.23
Tracking error	7.21%
Semi-standard deviation	13.72%
Risk-free rate	5.35%

In relation to the portfolio's performance, which of the following statements is correct?

I. The information ratio for the portfolio is 0.192.

II. The Sharpe ratio yields a result lower than the Sortino ratio but higher than the information ratio.

A. I only

B. II only

C. Both I and II

D. Neither I or II

Q-80. A portfolio has an average return over the last year of 13.2%. Its benchmark has provided an average return over the same period of 12.3%. The portfolio's standard deviation is 15.3%, its beta is 1.15, its tracking error volatility is 6.5% and its semi-standard deviation is 9.4%. Lastly, the risk-free rate is 4.5%. Calculate the portfolio's information Ratio (IR).

A. 0.569

B. 0.076

C. 0.139

D. 0.096

Q-81. Market portfolio's Sharpe ratio is 40%, the correlation between the market portfolio and the stock is 0.7, the stock's Sharpe ratio is:

A. 12%

B. 28%

C. 32%

D. 30%

Q-82. Assume that portfolio A has 10 stocks. The expected return of the portfolio is 15% with a standard deviation of 30%, and the beta of the portfolio is 1.2. Also assume that the expected return of the market is 12% with a standard deviation of 22%, and that the risk-free rate is 3.0%. Given this information, what are the Treynor, Sharpe, and Jensen measures, respectively?

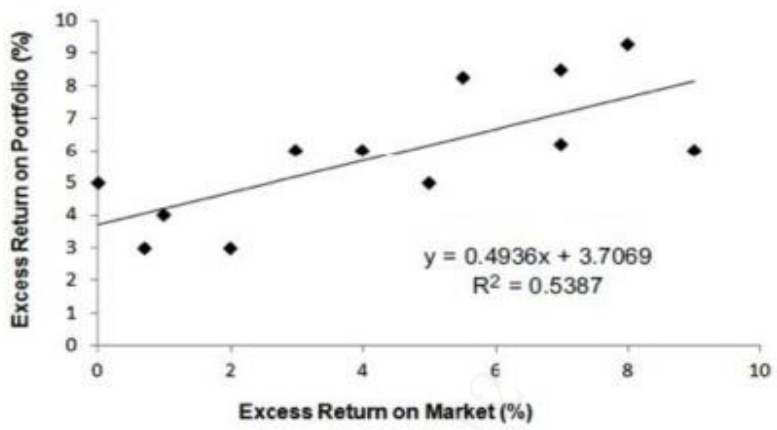
A. 0.10; 0.55; 0.012.

B. 0.10; 0.40; 0.012.

C. 0.55; 0.10; 0.15.

D. 0.55; 0.10; 0.4097.

Q-83. A risk manager is evaluating a portfolio of equities with an annual volatility of 12.1% per year that is benchmarked to the Straits Times Index. If the risk-free rate is 2.5% per year, based on the regression results given in the chart below, what is the Jensen's alpha of the portfolio?



A. 0.4936%

B. 0.5387%

C. 1.2069%

D. 3.7069%

1.12. APT Model and Multi-factor Model

1.12.1. 重要知识点

1.12.1.1. APT is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macro-economic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient.

1.12.1.2. Multi-Factor Model

Inputs:

- Expected return for the stock.
- Factor betas, also known as factor sensitivities or factor loadings.
- Deviation of macroeconomic factors from their expected values.
- Firm-specific return.

$$E(r_j) = r_f + \beta_{j1}RP_1 + \beta_{j2}RP_2 + \cdots + \beta_{jn}RP_n$$

$r_f = \text{risk - free rate}$

RP_k = risk premium of the factor

1.12.1.3. APT vs. CAPM

- The APT differs from the CAPM in that it is less restrictive in its assumptions.
- The CAPM can be considered a "special case" of the APT in that the securities market line represents a single-factor model of the asset price, where beta is exposed to changes in value of the market.
- While they demonstrate how exposure to systematic risk factors should influence expected returns, they do not provide much guidance regarding with risk factors, or sources of risk, should result in risk premiums.
- APT: no arbitrage chance. CAPM: risk-return dominance arguments.

1.12.1.4. Fama-French Three-Factor Model

The Fama-French three-factor model incorporates the following systematic factors:

$$R_{it} = \alpha_i + \beta_{iM}R_{Mt} + \beta_{i,SMB}SMB_t + \beta_{i,HML}HML_t + e_{it}$$

- SMB = Small minus big (the return of a portfolio of small stocks – return on a portfolio of large stocks)
- HML = High minus low (the return of a portfolio of stocks with a high book-to-market ratio – return on a portfolio of stocks with a low book-to-market ratio)

1.12.2. 基础题

Q-84. Which of the following is least likely to be one of the inputs to a multifactor model?

A. The mean-variance efficient market portfolio
B. Factor betas
C. Deviation of factor values from their expected values
D. Firm-specific returns

Q-85. Suppose an analyst examines expected return for the Broad Band Company (BBC) base on a 2-factor model. Initially, the expected return for BBC equals 10%. The analyst identifies GDP and 10-year interest rates as the two factors for the factor model. Assume the following data is used:

GDP growth consensus forecast = 6%
Interest rate consensus forecast = 3%
GDP factor beta for BBC = 1.5
Interest rate factor beta for BBC = -1.00

Suppose GDP ends up growing 5% and the 10-year interest rate ends up equaling 4%. Also assume that during the period, the Broad Band Company unexpectedly experiences shortage of key inputs, causing its revenues to be less than originally expected.

Consequently, the firm-specific return is -2% during the period. Using the 2-factor model with the revised data, which of the following updated expected returns next year for BBC is correct?

A. 1.5%

B. 3.5%

C. 5.5%

D. 6.5%

Q-86. Using an arbitrage pricing theory（APT）model，what is the expected return for a stock given the following factor betas and factor risk premiums? Assume the risk-free rate is equal to 2%.

Factor betas:

Standardized probability of default:0.5.

Standardized average daily trading volume:-0.2.

Standardized average earnings growth forecast:1.5.

Expected factor risk premiums:

Standardized probability of default:2%.

Standardized average daily trading volume:-1%.

Standardized average earnings growth forecast:1.5%.

A. 3.5%

B. 4.8%

C. 5.5%

D. 6.1%

Q-87. Which of the following statements is least likely a requirement for an arbitrage opportunity? The arbitrage situation leads to a:

A. Risk-free opportunity

B. Zero net investment opportunity

C. Profitable opportunity

D. Return in excess of the risk-free rate opportunity

Q-88. Sally Smith, FRM, is considering a switch in the theoretical basis of her risk model from a simple single-factor capital asset pricing model (CAPM) to a multi-factor arbitrage pricing theory (APT) model. To her manager, she claims the following differences between the two models. Each of her statements below is correct EXCEPT which is not?

A. Compared to only one specific factor (i.e., market index) in the simple CAPM, the APT model will be able to recognize multiple systematic risk factors.

B. While the CAPM requires a mean-variance efficient market portfolio and assumes normally distributed returns, APT requires neither of these assumptions.

C. Although APT does not require several of the restrictive assumptions of the CAPM, it is largely silent on where to look for priced sources of risk.

D. In contrast to the simple CAPM, the APT cannot include the market index as a common factor, nor can it be extended over multiple periods.

Q-89. An analyst is estimating the sensitivity of the return of stock A to different macroeconomic factors. He prepares the following estimates for the factor betas:

$$\beta_{\text{Industrial production}} = 1.3 \qquad \beta_{\text{Interest rate}} = -0.75$$

Under baseline expectations, with industrial production growth of 3% and an interest rate of 1.5%, the expected return for Stock A is estimated to be 5%.

The economic research department is forecasting an acceleration of economic activity for the following year, with GDP forecast to grow 4.2% and interest rates increasing 25 basis points to 1.75%.

What return of Stock A can be expected for next year according to this forecast?

A. 4.8%

B. 6.4%

C. 6.8%

D. 7.8%

Q-90. An analyst at a family endowment fund is studying the use of a factor analysis approach to hedge an investment portfolio. The analyst reviews the characteristics of factor analysis and best practices in implementing the approach. Which of the following statements is correct for the analyst to make?

A. Factor betas can be used in the process of hedging idiosyncratic risk, but they cannot be used in hedging systematic risk.

B. Choosing the frequency to adjust factor-based hedges requires making a decision that balances the hedging cost and the tracking error.

C. Factor hedging performs well when linear factor models are used, but performs poorly when nonlinear factor models are used.

D. While an investor can take positions in factors to construct a portfolio with a beta close to zero, the investor cannot theoretically construct a portfolio with a beta exactly equal to zero.

Q-91. An equity analyst at a pension fund is using an internal three-factor model to assess a potential investment in stock BBZ. Each of the three factors is represented by an

exchange-traded fund (ETF) which has a factor beta of 1 to that factor and a factor beta of 0 to all other factors. The analyst prepares the following information:

	Factor P	Factor Q	Factor R
Expected annual return of ETF factor	5.4%	6.8%	3%
Factor beta for stock BBZ	0.95	-0.40	1.20

If the annualized risk-free interest rate is 2.10% and stock BBZ has an alpha of 0.50%, what is the expected annual return on stock BBZ using the internal model?

A. 2.84%

B. 4.94%

C. 6.01%

D. 6.51%

Q-92. A risk analyst at a bank is explaining to an intern the use of the Arbitrage Pricing Theory (APT) in estimating the expected return of a security. The risk analyst uses the following APT formula in the discussion:

$$Ri=E(Ri)+\beta_{i1}[I_1-E(I_1)]+\cdots\beta_{iK}[I_K-E(I_K)]+e_i$$

Which of the following is a correct interpretation of β_{iK}?

A. It is a coefficient measuring the effect of changes in the rate of return of security k on the expected value of factor I.

B. It measures the difference between the observed and expected values of factor k.

C. It measures the idiosyncratic random shock to the price of security i which has a mean of zero.

D. It measures how the changes in the surprise factor k will affect the rate of return of security i.

1.13. Risk Data Aggregation and Reporting

1.13.1. 重要知识点

1.13.1.1. Basel Principles for Effective Risk Data Aggregation:

1) Governance
2) Data Architecture and Infrastructure
3) Accuracy and Integrity
4) Completeness
5) Timeliness
6) Adaptability
7) Accuracy
8) Comprehensive-ness

9) Clarity and Usefulness
10) Frequency
11) Distribution
12) Review
13) Remedial Actions and supervisory measures
14) Cooperation

1.13.2. 基础题

Q-93. The risk aggregation process includes breaking down, sorting, and merging data and datasets. Several benefits accrue to banks that have effective risk data aggregation and reporting systems in place. Which of the following statements do not describe a benefit of effective risk data aggregation?

A. Improved resolvability in the event of bank stress or failure.
B. The bank is better able to increase efficiency, reduce the chance of loss, and ultimately increase profitability.
C. It is easier to see problems on the horizon when risks are viewed individually rather than as a whole.
D. The bank is better able to make strategic decisions.

Q-94. In characterizing various dimensions of a bank's data, the Basel Committee has suggested several principles to promote strong and effective risk data aggregation capabilities. Which statement correctly describes a recommendation that the bank should follow in accordance with the given principle?

A. The integrity principle recommends that data aggregation should be completely automated without any manual intervention.
B. The completeness principle recommends that a financial institution should capture data on its entire universe of material risk exposures.
C. The adaptability principle recommends that a bank should frequently update its risk reporting systems to incorporate changes in best practices.
D. The accuracy principle recommends that the risk data be reconciled with management's estimates of risk exposure prior to aggregation.

Q-95. Here are some characteristics about a strong risk data aggregation capability, which of the following is/are correct?

I. Produce aggregate risk information on a timely basis.
II. Capture and aggregate all material risk data.

III. Generate ad hoc reports on data and risk analyses in response to management needs.

A. I and II.

B. II and III.

C. I and III.

D. I, II and III.

Q-96. A senior risk manager at a US-based bank is working with the chief technology officer (CTO) on implementing a strong set of risk data aggregation and reporting practices at the bank that better complies with the Basel principles. The CTO asks the manager's opinion regarding potential challenges to this implementation given the bank's current practices. Which of the following observations about the bank's current practices is most likely to pose a challenge for the bank in complying with the Basel principles for risk data aggregation and reporting?

A. The bank has been aggregating its data on its risk exposures at the bank-wide level.

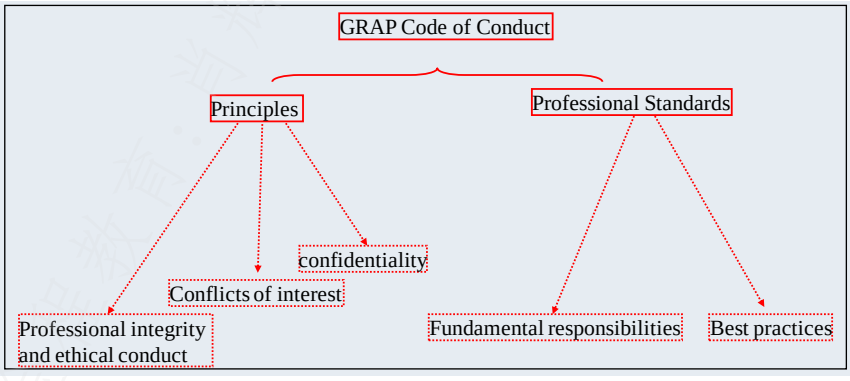
B. The bank has been adjusting the frequency of its risk reports to keep pace with changes in financial market volatility.

C. The bank has been expanding the use of artificial intelligence techniques to most of its data analysis processes.

D. The bank has been including all risk types, including the Basel Pillar 1 and Pillar 2 risk types, in its risk reports.

1.14. GARP Code of Conduct

1.14.1. 重要知识点



1.14.2. 基础题

Q-97. Which of the following are potential consequences of violating the GARP Code of Conduct once a formal determination that such a violation has occurred is made?

I. Suspension of the GARP Member from GARP's Membership roles.

II. Suspension of the GARP Member's right to work in the risk management profession.

III. Removal of the GARP Member's right to use the FRM designation or any other GARP granted designation.

IV. Required participation in ethical training.

A. I and II only

B. I and III only

C. II and IV only

D. III and IV only

Q-98. Isabelle Burns, FRM, is an investment advisor for a firm whose client base is composed of high net worth individuals, in her personal portfolio, Burns has an investment in Torex, a company that has developed software to speed up Internet browsing. Burns has thoroughly researched Torex and believes the company is financially strong yet currently significantly undervalued. According to the GARP Code of Conduct, Burns may:

A. Not recommend Torex as long as she has a personal investment in the stock.

B. Not recommend Torex to a client unless her employer gives written consent to do so.

C. Recommend Torex to a client, but she must disclose her investment in Torex to the client.

D. Recommend Torex to a client without disclosure as long as it is a suitable investment for the client.

Q-99. Beth Anderson, FRM, is a portfolio manager for several wealthy clients including Reuben Carlyle. Anderson manages Carlyle's personal portfolio of stock and bond investments. Carlyle recently told Anderson that he is under investigation by the IRS for tax evasion related to his business, Carlyle Concrete (CC). After learning about the investigation, Anderson proceeds to inform a friend at a local investment bank so that they may withdraw their proposal to take CC public. Which of the following is most likely correct? Anderson:

A. Violated the Code by failing to immediately terminate the client relationship with Carlyle.

B. Violated the Code by failing to maintain the confidentiality of her client's information.

C. Violated the Code by failing to detect and report the tax evasion to the proper authorities.

D. Did not violate the Code since the information she conveyed pertained to illegal activities on the part of her client.

Q-100. Over the past two days, Lorraine Quigley, FRM, manager of a hedge fund, has been purchasing large quantities of Craeger Industrial Products' common stock while at the

same time shorting put options on the same stock. Quigley did not notify her clients of the trades although they are aware of the fund's general strategy to generate returns. Which of the following statements is most likely correct? Quigley:

A. Did not violate the Code.

B. Violated the Code by manipulating the prices of publicly traded securities.

C. Violated the Code by failing to disclose the transactions to clients before they occurred.

D. Violated the Code by failing to establish a reasonable and adequate basis before making the trades.

Q-101. Jack Scbleifer, FRM, is an analyst for Brown Investment Managers (BIM). Schleifer has recently accepted an invitation to visit the facilities of ChemCo, a producer of chemical compounds used in a variety of industries. ChemCo offers to pay for Schlelfer's accommodations in a penthouse suite at a luxury hotel and allow Schleifer to use the firm's private jet to travel to its three facilities located in New York, Hong Kong, and London. In addition, ChemCo offers two tickets to a formal high-society dinner in New York. Schleifer declines to use ChemCo's corporate jet or to allow the firm to pay for his accommodations but accepts the tickets to the dinner (which he discloses to his employer) since he will be able to market his firm's mutual funds to other guests at the dinner. Has Schieifer violated the CARP Code of Conduct?

A. Yes.

B. No, since he is using the gifts accepted to benefit his employer's interests.

C. No, since the gifts he accepted were fully disclosed in writing to his employer.

D. No, since the gift he accepted is of nominal value and he declined to accept the hotel accommodations and the use of ChemCo's jet.

Q-102. Beth Bixby, FRM, oversees a mid-cap fund that is required to invest in a minimum of 40 and a maximum of 60 different issues. Bixby uses a quantitative approach to actively manage the assets. In promotional materials, she states that "through our complex quantitative approach, securities are selected that have similar exposures to a number of risk factors that are found in the S&P 500 Index. Thus the fund is designed to track the performance of the S&P 500 Index but will receive a return premium of between 2% and 4% according to our model's risk-return measures." This statement is:

A. Permissible since the assertion is supported by modern portfolio theory and estimates from the firms' model.

B. Not permissible since Bixby is misrepresenting the services that she and/or her firm are capable of performing.

C. Not permissible since Bixby is misrepresenting the investment performance she and/or

her firm can reasonably expect to achieve.

D. Permissible since the statement describes the basic characteristics of the fund's risk and return objectives.

Q-103. Joe Reilly, FRM, and Claire Meyers, FRM, are discussing the level of event risk in their bond portfolio. Reilly says that since their portfolio consists of investment grade bonds, event risk should not be a concern. Meyers says that since they have a small number of different issues in their portfolio, and event risk is idiosyncratic, the event risk in their portfolio is negligible. Which, if either, of these statements is based on correct assumptions?

A. Neither statement by Reilly nor Meyers are correct.

B. The statement made by Reilly is correct, but not the one made by Meyers.

C. The statement made by Meyers is correct, but not the one made by Reilly.

D. Both statements made by Meyers and Reilly are correct.

Q-104. Harriet Fields, an investment adviser specializing in selling municipal bonds, advertises on television explaining their safety and security. The bonds she is currently selling are limited obligation bonds backed only by the revenue generated from the projects they fund, which include a housing project and a golf course. Fields tells her prospective clients that the bonds are safe, secure, and offer generous interest payments. Which of the following statements is most correct regarding Fields's actions?

A. Fields did not violate the GARP Code of Conduct because municipal bonds are generally regarded as being safe investments.

B. Fields violated the part of the GARP Code of Conduct dealing with confidentiality.

C. Fields violated the GARP Code of Conduct when she misrepresented the bonds by not explaining their inherent risks.

D. Fields has not violated any of the ethical responsibilities related to the GARP Code of Conduct.

Q-105. Bob Hatfield has his own money management firm with two clients. The accounts of the two clients are equal in value. It is Hatfield's opinion that interest rates will fall in the near future. Based upon this, Hatfield begins increasing the bond allocation of each portfolio. In order to comply with Best Practices in the GARP Code of Conduct, the analyst needs to:

A. Inform the clients of the change and tell them it is based upon an opinion and not a fact.

B. Make sure that the change is identical for both clients.

C. File a report with the SEC of the new portfolio allocation.

D. Perform all of these functions.

Q-106. Junaid Manzoor has been hired as head of risk management by KDB Asset Management, a small investment firm in Pakistan. Manzoor implements a risk measurement framework to gauge portfolio risk for the firm. Unfortunately, the methodology he implements for risk measurement has changed considerably in recent years and is no longer used internationally. Neither Manzoor nor anyone else at the firm is aware of the changes to risk measurement approaches. As a GARP member, has Junaid violated the GARP Code of Conduct?

A. No, this is not a violation of the GARP Code of Conduct because neither Manzoor nor the firm is aware of the changes to risk measurement approaches.

B. No, this is not a violation as the methodology worked when Manzoor took his FRM exams.

C. This is only a violation of the GARP Code of Conduct if investment decisions are made based on Manzoor's risk reports.

D. Yes, this is a violation of the GARP Code of Conduct.

Q-107. A newly hired risk analyst at a bank is a certified FRM. The analyst is reviewing the bank's policies and procedures related to employee conduct and notices areas where they conflict with the GARP Code of Conduct. Which of the following is a potential consequence of violating the GARP Code of Conduct once a formal determination is made that such a violation has occurred?

A. Formal notification of a violation sent to the GARP Member's employer

B. Suspension of the GARP Member's right to work in the risk management profession

C. Removal of the GARP Member's right to use the FRM designation

D. Required participation by the GARP Member in ethics training

Q-108. Which of the following are potential consequences of violating the GARP Code of Conduct once a formal determination that such a violation has occurred is made?

A. A fine of $1,000.

B. A 2-year suspension of the GARP member from GARP's membership roles.

C. Reattend the FRM Part I and Part II examinations.

D. Required participation in ethical trading.

Solutions

1. Fundamentals of Risk Management

Q-1. Solution: D

The general form of the statement is: risk is the variability of unexpected, adverse outcomes; this incorporates non-financial risks (the client asked for a definition of "risk" not "financial risk"). The equivalent form that is specific to financial risk is: financial risk is the volatility (or variability) of unexpected losses.

Q-2. Solution: C

1. A rogue trader within an institution is an example of operational risk.
2. Stock XYZ decreases in price due to a market crisis is an example of equity price risk.
3. Using a put option to hedge an equity exposure is an example of basis risk.
4. Counterparty sues bank to avoid meeting its obligations is an example of legal risk.

Q-3. Solution: C

1. An insufficient training lead to misuse of order management system is an example of operational risk.
2. The widening of credit spreads represents an increase in market risk.
3. An option writer not honoring the obligation in a contract is a credit risk event.
4. When a contract is originated in multiple jurisdictions leading to problems with enforceability, there is legal risk.

Q-4. Solution: D

Diversification is a risk mitigate technique.

Q-5. Solution: C

The risk appetite is set well below the firm's total risk bearing capacity, and above the amount of risk the firm is exposed to currently (labeled here as the firm's risk profile).

Q-6. Solution: D

D is correct. Since the company receives a round of equity funding, the company's capital increases and thus increases its risk capacity. Since the company will switch its focus to riskier projects, it adjusts the amount and type of risk the company is willing to accept, which increases risk appetite.

A is incorrect. The company's risk capacity will increase as well.

B is incorrect. The risk appetite will increase as well.

C is incorrect. Both the company's risk capacity and risk appetite will increase.

Q-7. Solution: B

B is correct. Debt investors generally have little or no upside from a firm's revenue volatility, so they would prefer that the firm use hedging strategies to make its revenue stream more stable.
A is incorrect. If the equity investors are already diversified, they would generally prefer that the firm not hedge its firm-specific risks, since most of the risks specific to the firm are already diversified away in the investors' portfolios.
C is incorrect. Foreign exchange exposure is typically not a core competency of a computer manufacturer, so it would make sense in many instances for the firm to hedge this exposure. Also, since the firm is exposed for a longer period of time, this provides an additional argument in favor of hedging.
D is incorrect. Hedging tax exposure in this manner increases after-tax earnings, so equity investors would prefer that the firm uses hedges in this case.

Q-8. Solution: D

D is correct. An advantage of using exchange-based derivatives is that they can minimize counterparty credit exposure through margin requirements and netting arrangements.
A is incorrect. Exchange-based derivatives are designed to attract trading liquidity. Most can be traded fairly easily at a relatively low transaction cost, but these derivatives do not have zero transaction costs.
B is incorrect. A downside of using exchange-traded derivatives is that it is difficult for the risk manager to find a perfect fit for the position the manager wants to hedge. For example, a commodity risk manager may find the available futures contract does not cover the exact risk type, has a timing mismatch, or captures the price in the wrong location.
C is incorrect. The potential mismatches between exchange-traded instruments and the underlying position described above create basis risk. A privately traded bilateral OTC transaction would be more effective in minimizing basis risk.

Q-9. Solution: D

Each of A, B and C is FALSE. Instead, the following are true:
All credit portfolio have non-negative expected loss (EL).
Expected loss is a product of (i) the probability of the risk event occurring; (ii) the severity of the loss if the risk event occurs, and (iii) exposure at default.
While unexpected loss (UL) is a function of default correlation, expected loss (EL) is not influenced by portfolio granularity.

Q-10. Solution: A

Explains GARP, "In complex systems, such as the global climate or financial markets, extremely rare events can happen over long time periods, even if the system remains structurally stable. These

risks, really an extreme version of unexpected loss, are difficult to find in the data because (by definition) there are not a lot of them. Tail risk events might be rare, but a long enough time series of data should reveal evidence of their existence. Where data are scarce, modern risk management can sometimes apply statistical tail risk techniques, utilizing a branch of statistics called Extreme Value Theory (EVT) to help make tails more visible and to extract the most useful information." (2020 Financial Risk Management Part I: Foundations of Risk Management, 10th Edition. Pearson Learning Solutions, 10/2019).

In regard to B, C and D each is FALSE.

Q-11. Solution: C

In regard to A, B and D, each is TRUE. Specifically, each of the following is TRUE:

For an activity to increase shareholder value, its RAROC should be higher than the cost of equity capital.

Four applications of RAROC include business comparison, investment analysis, pricing strategies, and risk management cost/benefit analysis.

If RAROC's denominator is economic capital, which is typical, then its numerator should be an after-tax risk-adjusted expected return where the risk-adjusted refers to an adjustment for expected losses.

Q-12. Solution: C

C is correct. The portfolio of mortgage-backed securities would have the highest unexpected loss since the securities should have the highest correlation (covariance) and should have the most risk of moving downward simultaneously in a crisis situation.

Q-13. Solution: B

Option B is correct. The expected loss (EL) for a loan is calculated by multiplying the probability of default (PD) by the exposure at default (EAD) and the loss given default (LGD):

EL=PD×EAD×LGD

For the given loan:

- PD=5% or 0.05
- EAD×LGD=7 million

So the expected loss is: EL = 0.05×7,000,000=350,000

The unexpected loss (UL) is the difference between the Value-at-Risk (VaR) and the expected loss:

UL=VaR−EL= 2,000,000−350,000 = $1,650,000

Therefore, the expected loss is $350,000, while the unexpected loss is $1,650,000.

Q-14. Solution: B

The Board of Directors is ultimately responsible for risk oversight. Effective risk governance simply requires clear accountability; authority; and methods of communication; it is not necessary to have multiple levels. The point of risk governance is to consider the methods in which risk-taking is permitted, optimized, and monitored; it is not necessarily to minimize the amount of risk taken. The real point of risk governance is to increase the value of the organization from the perspective of the shareholders and/or stakeholders.

Q-15. Solution: C

Deep out-of-the-money calls have no value unless the firm value increases substantially, so providing deep out-of-the-money calls as an incentive could cause managers to take substantially higher risks and perform, less hedging, With an at-the-money call, managers could still be incentivized to take greater risks but they would not have to aim for as large of a stock price increase to recognize significant value from their options, so the danger of mismanaging risk is less. A deep in-the-money call would have a similar investment profile as a long equity position and both of the latter choices would provide the least managerial incentive to reduce risk management.

Q-16. Solution: B

B is correct. One of the good indicators is risk information flow. The weekly whole-company meeting allows the firm to see information flowing up and across the firm in a way that captures and highlights enterprise-scale risks.

A is incorrect. A compensation plan that is developed based on another company's business structures (especially a company that is at a different stage of its development) will not be a good indicator of healthy risk culture. One good indicator is compensation and performance metrics that are supportive of the firm's risk appetite and desired culture.

C is incorrect. Good indicators are the existence of a whistle-blowing mechanism that allows for escalation of suspected enterprise risks and that staff know how and when to escalate a suspected enterprise risk.

D is incorrect. This is incorrect as it would likely lead to too much risk being accepted at the firm. An example of a strong risk culture is that actions are taken against risk offenders; for example, if the firm penalizes the offender even if a risk violation leads to a profit rather than a loss.

Q-17. Solution: C

Option C is incorrect because it inaccurately describes the third line of defense. In the three lines of defense model, the third line is typically the internal audit function, not external audit. While external audits can be an additional layer of scrutiny, they are separate from the three lines of defense model. The internal audit's role is to provide independent and objective assurance that

the organization's risk management, governance, and internal control processes are operating effectively.

- The first line of defense consists of the operational managers who own and manage risks.
- The second line of defense includes risk management and compliance functions established to design and oversee the implementation of risk management practices.
- The third line of defense is the internal audit, which independently assures that the first two lines are functioning effectively and that the company's risk management processes are robust and reliable.

Option D is not the correct answer to the question but provides a critical view of the model, pointing out that risk management systems can have flaws and may become outdated, which is a realistic consideration but does not describe an inherent aspect of the three lines of defense concept.

Q-18. Solution: D

Firms can transfer some portion of their risks to third parties. For example, insurance contracts, financial derivatives, and securitization offer ways to transfer risks (at a financial cost).

Q-19. Solution: C

While it is accurate that the CRO is responsible for top-level risk management, he is also responsible for the analytical or systems capabilities for risk management.

Q-20. Solution: D

An effective ERM program should be integrated at several levels, across the company as a whole and integrated with the operational side of the company.

Q-21. Solution: C

Implementation of ERM requires integration. Appointing a CRO and establishing a centralized, integrated risk management team can better address the interdependencies among individual risks faced by the company and thus increase efficiency.

A is incorrect because ERM does not necessarily allow the company to determine and make use of a higher risk appetite.

B is incorrect because ERM suggests the opposite of a fragmented approach in risk management.

D is incorrect because ERM improves business performance by taking a portfolio view of all risks rather than on a standalone basis.

Q-22. Solution: B

Developing the organization's risk appetite statement is the responsibility of management. It is the

Board's role to review and provide appropriate feedback on management's work with regard to the risk appetite statement. Determining if the risk appetite may cause risks in other areas of the organization is consistent with the Board's oversight role.

Q-23. Solution: C

Risk appetite directly impacts the allocation of resources. Risk tolerance is a measure of an organization's ability to take risk.

Q-24. Solution: D

The CEO should not be the chairman of the board because there is already an inherent conflict with the CEO being on both the management team and the board of directors. As a result, the CEO should not be given additional powers on the board.

Q-25. Solution: C

In general terms, if a subject bank takes on too little risk, it may fail to capitalize on enough profitable opportunities and, therefore, may generate suboptimal returns for its shareholders. Ultimately, too little risk may decrease the value of the subject bank. On the other hand, if a subject bank takes on too much risk, it may become distressed and/or be unable to provide safe and liquid investments to its customers. Ultimately, too much risk may also decrease the value of the subject bank.

Q-26. Solution: D

A risk appetite statement states a broad level of risk across the organization the firm is willing to accept in order to pursue value creation. The statement is typically broadly articulated and can be communicated across the organization, and helps to allocate resources to specific objectives at the firm.

Q-27. Solution: D

A major contributing factor to the collapse of LTCM is that it did not account properly for the illiquidity of its largest positions in its risk calculations. LTCM received valuation reports from dealers who only knew a small portion of LTCM's total position in particular securities, therefore understating LTCM's true liquidity risk, When the markets became unsettled due to the Russian debt crisis in August 1998 and a separate firm decided to liquidate large positions which were similar to many at LTCM, the illiquidity of LTCM's positions forced it into a situation where it was reluctant to sell and create an even more dramatic adverse market impact even as its equity was rapidly deteriorating. To avert a full collapse, LTCM's creditors finally stepped in to provide $3.65 billion in additional liquidity to allow LTCM to continue holding its positions through the turbulent

market conditions in the fall of 1998. However, as a result, investors and managers in LTCM other than the creditors themselves lost almost all their investment in the fund.

Q-28. Solution: B

LTCM required their investors to invest for three years, thereby decreasing (not increasing) funding risk. Although the risk of their positions was quite small in theory, the size of their positions resulted in them selling at large discounts. They borrowed at favorable terms in their repurchase agreements, but the firm had high leverage which magnified the degree of their losses.

Q-29. Solution: A

Metallgesellschaft and Long Term Capital Management (LTCM) dealt in the derivatives market in huge quantities and both experienced a cash flow crisis due to the change in economic conditions. This led to huge mark-to-market losses and margin calls.

Q-30. Solution: A

Oil prices fell in the fall of 1993 because of OPEC's problems adhering to its production quotas, so the market changed into one of contango, so C and D are incorrect. In contango, the futures price is above the spot price and as a result Metallgesellchaft incurred losses on its short-dated long futures contracts, so B is incorrect and A is correct.

Q-31. Solution: D.

Enron was a poster child of corporate governance failure and poor risk management
Corporate Governance: Poor Risk Culture. As GARP explains, "In contrast to JPMorgan Chase's reputation for best-in-class risk management, the whale trades exposed a bank culture in which risk limit breaches were routinely disregarded, risk metrics were frequently criticized or downplayed, and risk evaluation models were targeted by bank personnel seeking to produce artificially lower capital requirements."

Q-32. Solution: B

LTCM's models underestimated the extent to which securities prices would move together in times of economic crisis. The models also failed to anticipate that multiple economic shocks might occur in clusters through time (i.e., be positively auto-correlated) as economic history suggests. Poor management oversight and financial reporting standards are not issues in the LTCM case.

Q-33. Solution: C

The collapse of Barings Bank was not an instance of flawed hedging models, but one of poor operational control. Lesson had previously incurred huge trading losses that, if revealed, would have cost him his job. In an effort to recover those losses, he abandoned his hedging strategies

and speculated to recoup these losses. His influence and authority in back office operations allowed him to hide his speculative losses and report phantom profits. Lesson ignored and exceeded risk control limits, and senior management's lack of understanding about Leeson's role and oversight allowed his schemes to go undetected.

Q-34. Solution: D

The basic problem at Barings was operation risk control. Nick Leeson was in charge of trading and settlement. This dual responsibility allowed him to hide losses by crossing trades at fabricated prices. He then booked the profitable side of the trade in accounts that were reported and the unprofitable side in an unreported account. The lack of supervision also permitted him to shift from hedged trading strategies to speculative strategies in an effort to hide previously incurred losses. Clearly his reporting to multiple managers in a convoluted organizational structure led to ambiguity concerning who was responsible for performing specific oversight functions.

Leeson used a short straddle strategy on the Nikkei 225 and held speculative double long positions in the market for Nikkei 225 futures contracts.

Liquidity was an issue in the Metallgeselschaft and LTCM cases, not Barings.

Q-35. Solution: B

B is correct. Nick Leeson, the rogue trader at Barings, was supposed to be running a low-risk, limited return arbitrage business out of his Singapore office, but in actuality he was investing in large speculative positions in Japanese stocks and interest rate futures and options. When Leeson fraudulently declared very substantial reported profits on his positions, management did not investigate the stream of large profits even though it was supposed to be associated with a low-risk strategy.

A is incorrect. The risk controllers' inquiries to investigate the large stream of profits reported by Nick Leeson were dismissed by Leeson's superiors, citing the bank's unique ability to exploit an arbitrage situation. The superiors did not cite hedging as a reason for wanting to maintain the positions.

C and D are incorrect. These scenarios did not occur at Barings Bank.

Q-36. Solution: B

B is correct. Leeson was supposed to be running a low-risk, limited return arbitrage business out of his Singapore office, but in actuality he was investing in large speculative positions in Japanese stocks and interest rate futures and options. When Leeson fraudulently declared very substantial reported profits on his positions, management did not investigate the stream of large profits even thought it was supposed to be associated with a low-risk strategy.

A is incorrect. Lesson was the head of the back office, so he didn't need to convince them.
C is incorrect. The primary products Lesson was trading were futures and options.
D is incorrect. The finance (Tony Hawes) and settlement (Tony Railton) staff found the loss when they went to Singapore to solve several problems due to the lack of sufficient supporting information about the requirement for margin increase submitted to London.

Q-37. Solution: B

The "sheer complexity" of the transaction was at the heart of the dispute and appears to generally not be in dispute.
In regard to A, P&G "had been entering into such trades for several years prior to 1994 with good results."
In regard to C, P&G was seeking to REDUCE FUNDING COST (consequently that had directional exposure to a rise in interest rates) and "the derivatives were not tailored to any particular needs of P&G or Gibson".
In regard to D, BT asserted that it was NOT acting in an advisory (fiduciary) role to P&G, since the firm had retained its own outside experts to create interest rate forecasts. Notice how this issue resembles Goldman Sachs' position with respect to the ABACUS transaction.

Q-38. Solution: D

In regard to A, B, and C, these are all lessons learned. In regard to A, Allen is particularly critical: he thinks the complexity of the transaction, since they "hadn't been tailored to meet client needs," was a deliberate aspect of the manipulation by Bankers' Trust.
In regard to D, please note COMPLEXITY is fundamental to the case. However, Allen says the lesson was not that complex transactions should be avoided but rather that the scandal caused firms "to tighten up their procedures for dealing with customers, both in better controls on matching the degree of complexity of trades to the degree of financial sophistication of customers …" So this is rather an issue of complexity with regard to client suitability.

Q-39. Solution: A.

Q-40. Solution: C

II, III are false. Enron built a physical asset and then immediately declare a projected mark-to-market profit on its books, it would do this even though it had not yet made any money from the physical asset.
Andersen either failed to catch or explicitly approved many of fraudulent accounting practices that led to Enron's collapse

Q-41. Solution: B.

A poor risk culture enabled by failures in corporate governance.

Q-42. Solution: D.

A hedge does not avoid the assumption of embedded risks that may not be understood; the hedge/speculation intention is important but does not completely warranty the risks of the position. More importantly, complex positions are combinations of the primary building blocks such that complex hedge positions do not avoid running significant risks.

Q-43. Solution: A

A is correct. Orange County imploded when Robert Citron made a large bet on inverse floating swaps, which was not fully understood by the county's board of directors, and blew up when interest rates rose. Citron later admitted that he did not understand either the position that he took or the risk exposure of the fund.

B is incorrect. Poor correlation modeling was more a central theme of the subprime crisis or Long Term Capital Management (although the LTCM incident did not occur during a crisis.) The London Whale case took place in 2012, well after the end of the crisis, and its main themes were poor corporate governance with respect to risk concentration limits, position limits and VaR models.

C is incorrect. This refers to the SWIFT case. The Northern Rock case was a run on the bank which occurred partly due to an overreliance on repurchase agreements and liquidity risk when repo financing dried up.

D is incorrect. The LTCM case was a case of incorrect correlation modeling and inadequate stress testing. As a hedge fund, LTCM was not covered by regulatory capital requirements at the time.

Q-44. Solution: D

Option D is correct because it points out that Niederhoffer's strategy failed to properly consider extreme market events, known as tail risks. These are rare but impactful events that can occur in the financial markets. Writing uncovered put options entails a bet that significant market declines won't happen. However, during the 1997 market downturn, such an extreme event did occur, leading to substantial losses for the fund and resulting in the liquidation of its positions. The other options, A, B, and C, are either too general or not directly related to the specific market conditions of 1997 that led to the hedge fund's failure.

Q-45. Solution: C

Option C is correct. Basis risk refers to the risk that the futures price and the spot price may not move in perfect correlation, which can lead to hedging ineffectiveness. In the

MGRM case, even if the company didn't face the significant drop in spot oil prices or a shift in the price curve to contango, it would still have to worry about basis risk. This is because the rolling hedge strategy involves periodically replacing expiring futures contracts with new ones. If the prices of the new futures contracts do not perfectly track the prices of the underlying physical oil, MGRM could experience losses or less effective hedges. The other concerns listed in options A, B, and D (frequent trading costs, liquidity concerns, or no worries at all) are not as pertinent as the basis risk in the context of MGRM's situation, given that the prompt eliminates concerns about significant spot price falls and a shift to contango.

Q-46. Solution: D

Option D is incorrect because it does not directly relate to the lessons learned from the Orange County bankruptcy. The Orange County case primarily involved the mismanagement of public funds by a government official, not the conduct of banks toward their customers. The focus of the Orange County lessons is on the importance of understanding investment risks, maintaining risk management frameworks, and recognizing the potential for significant loss due to leverage in complex securities, especially when interest rates are volatile. The statement in Option D would be more applicable to lessons learned from banking scandals involving complex financial products sold to customers who may not fully understand the risks, rather than a case involving a public official's mismanagement of investment funds.

Q-47. Solution: A

The housing bubble can be seen as the product of two broad factors:

1. Low interest rate. The lax interest policy Federal Reserve adopted and an increase in demand for U.S securities by foreign investors are mainly the factors of low interest rate.

2. Declining lending standards. Financial securitization and originate-to-distribute could transfer the default risk of the borrowers to investors, so the originating institutions had little intentions to be diligent in their creditworthiness assessment. As a result, lending standards fell substantially.

Q-48. Solution: C

Asset-liability mismatch refers to the purchase of long-term assets through short-term financing. Banks used commercial paper and repurchase agreements to finance the purchase of long-term assets. So they have to face funding liquidity risk.

Q-49. Solution: B

Bid-ask prices are inversely related to market liquidity, and as market liquidity increases, bid-ask prices narrow. Choice a is incorrect. A liquidity backstop is a revolving loan (credit line) extended

by sponsor banks to structured investment vehicles to ensure continuity of funding liquidity. Choice c is incorrect. While a loss spiral is accurately described as the forced sale of assets due to a decline in asset values, it results in a higher new position value than under a margin spiral. Choice d is incorrect. Collateralized debt obligations(CDOs), not credit default swaps(CDS), pay out cash flows from a portfolio of debt instruments.

Q-50. Solution: A

Securitization transfers the default risk of borrowers to investors, so the originating institutions do not have the incentive to be diligent on the borrowers' creditworthiness. By tranching, securitization could provide low mortgage interest rates to more risk-bearing investors. Securitization can help overcome regulatory hurdles.

Q-51. Solution: A

A is correct. CDS (or credit default swaps) are credit derivatives that quantify a company's default risk and allow the bank to monitor changes in the company's default risk on a real-time basis. This is an improvement over credit ratings, which only update assessments of companies' default risk on a periodic basis.

B is incorrect. This would be a feature of marking-to-market/margining.

C is incorrect. This would be an example of a termination/put option mechanism.

D is incorrect. CDS do not provide an offset using loan exposures to other counterparties. A separate transfer mechanism, netting, can be used to offset negative and positive exposures to the same counterparty but this statement does not correctly describe netting either.

Q-52. Solution: C

Historically， the discount window was available to commercial banks to meet their reserve requirements at the close of each day. At the peak of the crisis, the discount window was also made available to investment banks.

Q-53. Solution: B

B is correct. One of the key governance recommendations is that banks should establish an independent risk management function with access to the board of directors. This prevents the risk function from being suppressed, as it would be if it was subordinate to other divisions such as trading operations, and ensures that the board is advised of risk issues.

A is incorrect. Securitization was a key contributor to the crisis, as many tranches of securitized mortgages had very high credit ratings but collapsed during the crisis as investors and rating agencies underestimated the potential for all the mortgages in a securitization to go down together.

Post-crisis governance did not encourage increased securitization.

C is incorrect. Dodd-Frank's Volcker rule, for example, prohibited banks from proprietary trading, and around the world many trading operations were required to be (or were voluntarily) divested from banking operations.

D is incorrect. Post-crisis regulation encouraged central clearing when possible.

Q-54. Solution: C

C is correct. One of the reasons for why delinquencies rose significantly after mid- 2005 is that in 2005, 43% of first-time home buyers paid zero down payment, significantly reducing the collateral cushion in case housing prices declined.

A is incorrect. Mortgages becoming increasingly under-collateralized is another factor contributing to the crisis.

B is incorrect. Another reason contributing to the crisis that the interest rates started to increase in 2005. This forced payments on adjustable-rate mortgages higher after the initial "teaser" period.

D is incorrect. Housing prices began to fall sharply in 2006. An increase in housing prices would have been beneficial to subprime mortgage holders.

Q-55. Solution: C

Option C is correct as it identifies a key aspect of the Dodd-Frank Act related to enhancing the stability of the financial system through rigorous testing. The Act introduced DFAST (Dodd-Frank Act Stress Tests) and CCAR (Comprehensive Capital Analysis and Review) to evaluate the resilience of banks under stressful economic conditions. DFAST applies to banks with assets above $10 billion, whereas CCAR applies to larger institutions with assets above $50 billion. These stress tests are designed to ensure that banks have adequate capital buffers to withstand future financial shocks. Options A, B, and D, while related to the themes of the Act, do not accurately describe the specific provisions addressed by the Dodd-Frank Act concerning stress testing and scenario analysis for financial institutions.

Q-56. Solution: D

CAPM assumes investors seek to maximize the expected utility of their wealth at the end of the period, and that when choosing their portfolios, investors only consider the first two moments of return distribution: the expected return and the variance. Hence, investors are not concerned with the tails of the return distribution.

Q-57. Solution: A

Since the return to W is the nearest to Z (stocks), it is logical to assume that point W represents an

allocation of 90% stocks/10% bonds. The return for W is lower than Z, but it also represents a reduction in risk.

Q-58. Solution: C

The efficient frontier consists of portfolios that have the maximum expected return for any given level of risk (standard deviation or variance). The efficient frontier starts at the global minimum-variance portfolio and continues above it. Any portfolio below the efficient frontier is dominated by a portfolio on the efficient frontier. This is because efficient portfolios have higher expected returns for the same level of risk.

Q-59. Solution: C

The CML is the line connecting T-bills and Portfolio P. The market price of risk is the slope of the CML. Had risk been measured on the graph with beta, the graph would represent the SML. The market price of risk would still be the slope of the line.

Q-60. Solution: A

The following equation is used to calculate beta:

$$\beta = \rho \times \frac{\sigma_P}{\sigma_B} = 0.8 \times \frac{0.05}{0.04} = 1.00$$

Q-61. Solution: B

The CAPM equation is: $E(R_i) = R_f + \beta_i [E(R_M) - R_f]$. Franklin forecasts the beta for CostSave as follows: beta forecast = 0.80 + 0.20 historical beta = 0.80 + 0.20×1.50 = 1.10

The CAPM required return for CostSave is: 0.05 + 1.1×0.08 = 13.8%

Note that the market premium, $E(R_M) - R_f$, is provided in the question (8%).

Franklin should decide that the stock is overvalued because she forecasts that the CostSave return will equal only 10%, whereas the required return (minimum acceptable return) is 13.8%.

Q-62. Solution: A

Beta identifies the appropriate level of risk for which an investor should be compensated. Unsystematic risk is asset-specific and, therefore, a diversifiable risk. The market risk premium is calculated as the excess of the expected return on the market over the risk-free rate of return. Assets with equivalent betas should earn the same return because arbitrage will prevent assets with the same risk from earning different returns.

Q-63. Solution: A

Based on the CAPM, the portfolio should earn: E(R) = 0.05 + 0.7(0.10) =12%. On a risk-adjusted basis, this portfolio lies on the security market line (SML) and thus is earning the proper risk-

adjusted rate of return.

Q-64. Solution: A

Within modern portfolio theory (MPT), the efficient frontier is a combination of assets that has the best possible expected level of return for its level of risk. The efficient frontier is the positively sloped portion of the opportunity set that offers the highest expected return for a given risk level. The efficient frontier is at the top of the feasible set of portfolio combinations. ii, iii and v are correct statements.

The capital market line connects the risk-free asset and the market portfolio. The efficient frontier does allow investors to have different risk aversions, but assumes that they all have the same forecast for asset returns.

Q-65. Solution: C

If the CAPM holds, then $R_i = R_f + \beta_i \times (R_M - R_f)$, which is maximized at the greatest possible beta value which implies a correlation of 1 between the fund's return and the index return. Since the volatility of the fund is twice that of the index, a correlation of 1 implies a maximum beta βi of 2. Therefore: $R_i(\max) = 2.5\% + 2 \times (12.3\% - 2.5\%) = 22.1\%$.

Q-66. Solution: C

Since the correlation or covariance between the Atlantis Fund and the S&P 500 is not known, CAPM must be used to back out the beta: $\overline{R}_i = R_f + \beta_i \times (\overline{R}_M - R_f)$.

Therefore: $8.3\% = 2.0\% + \beta_i \times (7.6\% - 2.0\%)$; hence $\beta_i = \frac{8.3\% - 2.0\%}{7.6\% - 2.0\%} = 1.13$

Q-67. Solution: C

Systematic risk cannot be eliminated by diversification. Unsystematic risk can be reduced by diversification. Diversification benefits will occur any time security returns have less than perfect positive correlations.

Q-68. Solution: D

D is correct. CAPM assumes investors have identical expectations with respect to expected returns, the variance of returns, and the correlation matrix representing the correlation structure between all pairs of stocks. The other choices are not assumptions of the CAPM.

A is incorrect. CAPM assumes no transaction costs, taxes, or other frictions.

B is incorrect. CAPM assumes any individual investor's allocation decision cannot change the market prices.

C is incorrect. As said above, CAPM assumes no transaction costs, taxes, or other frictions.

Q-69. Solution: A

Option A is correct. The Capital Asset Pricing Model (CAPM) calculates the expected return on a portfolio based on the risk-free rate, the beta of the portfolio, and the expected return of the market. The CAPM formula is:

$$Expected\ Portfolio\ Return = R_f + \beta \times (Expected\ Market\ Return - R_f)$$

Therefore, the adjustment increases the expected portfolio return by 1.12*(9.0%-8.2%)=0.896%.

Q-70. Solution: D

The ability to borrowing or lend morphs the concave/convex efficient frontier into the linear CML; i.e., the leveraged portfolio is efficient with higher risk and higher return.

All portfolios on the CML have the same Sharpe ratio: the slope of the CML.

Q-71. Solution: A

Systematic risk of a portfolio is that risk which is inherent in the market and thus cannot be diversified away. In this situation you should seek a measure which ranks funds based on systematic risk only, which is reflected in the beta as defined below: $\beta_P = (\rho_{P,M} \times \sigma_P \times \sigma_M)/\sigma_M^2$

Where ρ_{PM} is the correlation coefficient between the portfolio and the market, $\sigma_P$represents the standard deviation of the portfolio and σ_M represents the standard deviation of the market. In a well-diversified portfolio (where one is normally only concerned with systematic risk), it can be assumed that the correlation coefficient is close to 1, therefore beta can be approximated to an even simpler equation: $\beta_P = \sigma_P/\sigma_M$

In either case, beta explains the volatility of the portfolio compared to the volatility of the market, which captures only systematic risk.

The Treynor ratio is the correct ratio to use in this case. The formula is: $T_P = [E(R_P) - R_f]/\beta_P$ which describes the difference between the expected return of the portfolio, $E(R_p)$ and the risk free rate R_f divided by the portfolio beta β. Therefore, it plots excess return over systematic risk.

Q-72. Solution: B

The Treynor measure is most appropriate for comparing well-diversified portfolios. That is the Treynor measure is the best to compare the excess returns per unit of systematic risk earned by portfolio managers, provided all portfolios are well-diversified.

All three portfolios managed by Donaldson Capital Management are clearly less diversified than the market portfolio. Standard deviation of returns for each of the three portfolios is higher than the standard deviation of the market portfolio, reflecting a low level of diversification.

Jensen's alpha is the most appropriate measure for comparing portfolios that have the same beta. The Sharpe measure can be applied to all portfolios because it uses total risk and it is more widely used than the other two measures. Also, the Sharpe ratio evaluates the portfolio performance

based on realized returns and diversification. A less-diversified portfolio will have higher total risk and vice versa.

Q-73. Solution: C

Relative risk measures risk relative to a benchmark index, and measures it in terms of tracking error or deviation from the index.

We need to calculate the standard deviation (square root of the variance) of the series:

{0.08, 0.04, 0.02, 0.01, 0.005}

Perform the calculation by computing the difference of each data point from the mean, square the result of each, take the average of those values, and then take the square root. This is equal to 3.04%.

Q-74. Solution: B

The information ratio may be calculated by either a comparison of the residual return to residual risk, or the excess return to tracking error. The higher the IR, the better 'informed' the manager is at picking assets to invest in. Since neither residual return nor risk is given, only the latter is an option.

IR = $E(R_p-R_b)$/Tracking Error

For Fund I: IR = 0.00073/0.00344 = 0.212

For Fund II: IR = 0.00053/0.00341 = 0.155

Q-75. Solution: D

$$\text{SR} = \frac{\text{E}(\text{R}_\text{P}) - \text{R}_\text{F}}{\sigma(\text{R}_\text{P})} = \frac{2.5\% - 3.5\%}{21\%} = -0.0476$$

$$\text{Sortino Ratio} = \frac{\text{E}(\text{R}_\text{P}) - \text{MAR}}{\sqrt{\frac{1}{\text{T}}\sum_{\text{t=0}}^{\text{T}}(\text{R}_{\text{Pt}} - \text{MAR})^2}} = \frac{2.5\% - 3.5\%}{16\%} = -0.0625$$

The difference between these two ratios is: —0.0625 — (-0.0476)= -0.0149.

Q-76. Solution: A

The Jensen measure of a portfolio, or Jensen's alpha, is computed as follows:

$$\alpha_\text{P} = \text{E}(\text{R}_\text{P}) - \text{R}_\text{f} - \beta \times [\text{E}(\text{R}_\text{M}) - \text{R}_\text{f}] = 8\% - 5\% - 0.5 \times (10\% - 5\%) = 0.5\%$$

Q-77. Solution: B

Solve for beta in the following equation,

$$\text{E}(\text{R}_\text{P}) = \text{R}_\text{f} + \beta \times [\text{E}(\text{R}_\text{M}) - \text{R}_\text{f}] + \text{Jensen's } \alpha = 4.25\% + \beta \times 6\% + 4.75\% = 14.2\%$$

Q-78. Solution: C

The Sharpe ratio for the portfolio is (6.6% - 1.5%)/13.1% = 0.389.

Q-79. Solution: C

SR=(13.75%-5.35%)/16.9%=0.497

SOR=(13.75%-5.35%)/13.72%=0.612

IR=(13.75%-12.36%)/7.21%=0.192

Q-80. Solution: C

$$\text{IR} = \frac{\text{E}(\text{R}_\text{P}) - \text{E}(\text{R}_\text{B})}{\sigma(\text{R}_\text{P} - \text{R}_\text{B})} = \frac{13.2\% - 12.3\%}{6.5\%} = 0.139$$

Q-81. Solution: B

$$\text{E}(\text{R}_\text{i}) - \text{R}_\text{f} = \beta_\text{i} \times [\text{E}(\text{R}_\text{m}) - \text{R}_\text{f}]$$

$$\frac{\text{E}(\text{R}_\text{i}) - \text{R}_\text{f}}{\sigma_\text{i}} = \frac{\beta_\text{i} \times [\text{E}(\text{R}_\text{m}) - \text{R}_\text{f}]}{\sigma_\text{i}} = \frac{\beta_\text{i}}{\sigma_\text{i}}\sigma_\text{m} \times \frac{[\text{E}(\text{R}_\text{m}) - \text{R}_\text{f}]}{\sigma_\text{m}} = \rho_\text{i} \times \frac{[\text{E}(\text{R}_\text{m}) - \text{R}_\text{f}]}{\sigma_\text{m}} = 0.7 \times 40\%$$

$$= 28\%$$

Q-82. Solution: B

TR=(0.15-0.03)/1.2=0.10

SR=(0.15-0.03)/0.30=0.40

Jensen alpha=0.15-[0.03+(0.12-0.03)1.2]=0.012

Q-83. Solution: D

$$\text{Excess Return on Portfolio} = 0.4936 \times \text{Excess Return on Market} + 3.7069$$

$$\text{E}(\text{R}_\text{P}) - \text{R}_\text{F} = 0.4936 \times [\text{E}(\text{R}_\text{M}) - \text{R}_\text{F}] + 3.7069$$

$$\text{Jensen's alpha} = \text{E}(\text{R}_\text{P}) - \{\text{R}_\text{F} + \beta[\text{E}(\text{R}_\text{M}) - \text{R}_\text{F}]\}$$

$$= \text{E}(\text{R}_\text{P}) - \text{R}_\text{F} - \beta[\text{E}(\text{R}_\text{M}) - \text{R}_\text{F}]$$

$$= 3.7069$$

The Jensen's alpha is equal to the y-intercept, or the excess return of the portfolio when the excess market return is zero. Therefore it is 3.7069%.

Q-84. Solution: A

The mean-variance efficient market portfolio is essential to the capital asset pricing model, but is not required in multifactor models.

Q-85. Solution: C

$$\text{R}_\text{BBC} = \text{E}(\text{R}_\text{BBC}) + \beta_{\text{BBC,GDP}}\text{F}_\text{GDP} + \beta_{\text{BBC,IR}}\text{F}_\text{IR} + \text{e}_\text{BBC}$$

$R_{BBC} = 0.10 + 1.5 \times (-0.01) - 1 \times (0.01) - 0.02 = 0.055 = 5.5\%$

Q-86. Solution: C

Given the factor betas and factor risk premiums, the expected return for the stock is calculated as follows:

$E(R_P) = 0.02 + 0.5 \times 0.02 + (-0.2) \times (-0.01) + 1.5 \times 1.5\% = 5.5\%$

Q-87. Solution: D

An arbitrage situation exists if a risk-free, zero net investment can be created that produces a positive profit. The arbitrage return need not exceed the risk-free rate.

Q-88. Solution: D

Both components are false: APT can include the market portfolio as a common factor; and APT can be extended over multiple periods.

In regard to A, B and C, each is true.

Q-89. Solution: B

The expected return for Stock A equals the expected return for the stock under the baseline scenario, plus the impact of "shocks", or excess returns of, both factors. Since the baseline scenario incorporates 3% industrial production growth and a 1.5% interest rate, the "shocks" are 1.2% for the GDP factor and 0.25% for the interest rate factor.

Therefore the expected return for the new scenario

$$= \text{Baseline scenario expected return} + \beta_{\text{Industrial production}} \times \text{Industrial production shock} + \beta_{\text{Interest rate}} \times \text{Interest rate shock}$$

$$= 5\% + (1.3 \times 1.2\%) + (-0.75 \times 0.25\%) = 6.37\%$$

Q-90. Solution: B

B is correct. Determining how often a hedge needs to be adjusted is a key challenge. There is a tradeoff between the cost of hedging and the need to keep the hedge aligned to the portfolio. If the hedging strategy is not implemented on a continuous basis, then tracking errors will appear. If the hedging strategy is updated too frequently, trading costs will be high and drag down overall performance.

A is incorrect. While idiosyncratic (i.e., specific) risk can theoretically be eliminated through diversification, the same is not true for systematic risk. However, factor betas can be used to construct a hedging strategy to eliminate systematic risk.

C is incorrect. Factor hedging could be based on either a linear or nonlinear model. Either could have a sound hedging effect. What is challenging is model risk, which includes both factor model errors and the potential for errors in implementation.

Factor model errors occur when a model contains mathematical errors or is based on misleading/inappropriate assumptions. For example, a hedging strategy that is based on linear factor models that fail to capture nonlinear relationships among the factors will be flawed.

D is incorrect. The goal of hedging out all the factor risks and creating a zero-beta portfolio can theoretically be achieved by taking the opposite positions in each of the factors so that the combined portfolio contains no factor exposures. This is theoretically possible, although in practice some slight beta exposure might be left due to rounding the hedging instruments to the nearest single unit.

Q-91. Solution: B

B is correct. The first step is to find the expected excess return for each factor, which is calculated by subtracting the risk-free rate from the expected return as follows: for factor P it is 5.40% - 2.10% = 3.30%, for factor Q it is 6.80% - 2.10% = 4.70%, and for factor R: 3.00% - 2.10% = 0.90%

Multiplying by the respective factor betas for stock BBZ provides the contribution to the stock's expected return from its factor exposures: 0.95 * 3.30% + (-0.40) * 4.70% + 1.20 * 0.90% = 2.34%

Then, to find the total expected return for stock BBZ, add the alpha and the risk-free rate to the stock's expected return from its factor exposures, to get 2.34% + 0.50% + 2.10% for a total expected return of 4.94%.

Q-92. Solution: D

D is correct. βik is a coefficient measuring the effect of changes in I_K (the observed value of factor k) on the rate of return of security i.

A is incorrect. It is a is a coefficient measuring the changes in factor I_K on the rate of return of security i.

B is incorrect. $[I_K - E(I_K)]$ is the difference between the observed and expected values in factor k.

C is incorrect. This is the noise factor e_i.

Q-93. Solution: C

Several benefits accrue to banks that have effective risk data aggregation and reporting systems in place. These benefits include：

1. An increased ability to anticipate problems. Aggregated data allows risk managers to understand risks holistically. It is easier to see problems on the horizon when risks are viewed as a whole rather than in isolation.

2. In times of financial stress, effective risk data aggregation enhances a bank's ability to identify routes to return to financial health.
3. Improved resolvability in the event of bank stress or failure.
4. By strengthening a bank's risk function，the bank is better able to make strategic decisions，increase efficiency，reduce the chance of loss, and ultimately increase profitability.

Q-94. Solution: B

The completeness principle recommends that a bank be able to capture and aggregate all data on the material risks to which it is exposed across the organization. This will allow it to identify and report risk exposures, concentrations, and set exposure limits.

Q-95. Solution: D

To capture and aggregate all material risk data (completeness).

To produce aggregate risk information on a timely basis (timeliness), and

To generate ad hoc reports on data and risk analyses in response to management needs (adaptability).

Q-96. Solution: C

C is correct. The exponential increase in the application of AI techniques on large data sets has made compliance with BCBS 239 (the principles for risk data aggregation) more challenging. Therefore, the bank's increasing use of artificial intelligence techniques will be a challenge to its implementation of the principles.

A is incorrect. The ability to aggregate data at a firm-wide level rather than on a local team or business unit level is one of the goals of implementing strong risk data aggregation practices.

B is incorrect. Risk reporting frequency is a function of the risk type and purpose of each risk report. During times of stress, report frequency may increase to keep pace with unusually fast-moving markets.

D is incorrect. All risk types, including the Pillar 1 and Pillar 2 risks, should be included in the risk reports.

Q-97. Solution: B

According to the GARP Code of Conduct, violation(s) of the Code may result in the temporary suspension or permanent removal of the GARP Member from GARP's Membership roles, and may also include temporarily or permanently removing from the violator the right to use or refer to having earned the FRM designation or any other GARP granted designation, following a formal determination that such a violation has occurred.

Q-98. Solution: C

Standards 2.1 and 2.2 - Conflicts of Interest. Members and candidates must act fairly in all situations and must fully disclose any actual or potential conflict to all affected parties. Sell-side members and candidates should disclose to their clients any ownership in a security that they are recommending.

Q-99. Solution: B

Anderson must maintain the confidentiality of client information according to Standard 3.1. Confidentiality may be broken in instances involving illegal activities on the part of the client, but the client's information may only be relayed to proper authorities. Anderson did not have the right to inform the investment bank of her client's investigation.

Q-100. Solution: A

A Quigley's trades are most likely an attempt to take advantage of an arbitrage opportunity that exists between Craeger's common stock and its put options. She is not manipulating the prices of securities in an attempt to mislead market participants. She is pursuing a legitimate investment strategy Participants in her hedge fund are aware of the fund's investment strategy, and thus Quigley did not violate the Code by not disclosing this specific set of trades in advance of trading (Standards 2.1 and 5.1).

Q-101. Solution: A

GARP Members must not offer, solicit, or accept any gift, benefit, compensation, or consideration that could be reasonably expected to compromise their own or another's independence and objectivity. Schleifer has appropriately rejected the offer of the hotel accommodations and the use of ChemCo's jet. However, Schleifer cannot accept the tickets to the dinner. Since it is a formal high-society dinner, the tickets are most likely expensive or hard to come by. Even though he has disclosed the gift to his employer and he plans to use the dinner as a marketing opportunity for his firm, the gift itself may influence Schliekr's future research in favor of ChemCo. Allowing such potential influence is a violation of Professional Integrity and Ethical Conduct (Standard 1.2).

Q-102. Solution: C

It is not reasonable for Bixby to expect a 40-to-60 stock mid-cap portfolio to track the entire S&P 500 Index, which is a large-cap index. She should know that there will be periods of wide variance between the performance of the portfolio and the S&P 500 index. There is no assurance that a premium of 2% to 4% will consistently be obtained. Bixby is in violation of Standard 1.4: "GARP Members shall not knowingly misrepresent details relating to analysis, recommendations, actions, or other professional activities," since she has made an implicit guarantee of the fund's expected

performance.

Q-103. Solution: A

Even investment grade bonds are exposed to the risk of the issuer being taken over or merging with another company. Event risk can increase on a market level if there is a trend toward increasing mergers in the economy.

Q-104. Solution: C

Fields violated the Professional Integrity and Ethical Conduct section of the Code of Conduct by misrepresenting the bonds as being safe and secure when in fact they were investing in risky projects and backed only by the revenue generated from those projects. According to the Code, GARP Members shall not knowingly misrepresent details relating to analysis, recommendations, actions, or other professional activities.

Q-105. Solution: A

GARP Members shall make a distinction between fact and opinion in the presentation of analysis and recommendations. The analyst must inform the clients of the change and tell them it is based upon an opinion and not a fact.

Q-106. Solution: D

The GARP Code of Conduct states that GARP members should be familiar with current generally accepted risk management practices.

Q-107. Solution: C

C is correct. According to the GARP Code of Conduct, "violation(s) of this Code may result in, among other things, the temporary suspension or permanent removal of the GARP Member from GARP's Membership roles, and may also include temporarily or permanently removing from the violator the right to use or refer to having earned the FRM designation or any other GARP granted designation, following a formal determination that such a violation has occurred."

A, B, and D are incorrect. The GARP Code of Conduct does not state that these consequences would result from a violation.

Q-108. Solution: B

Option B is correct. The Global Association of Risk Professionals (GARP) may impose various disciplinary measures for violations of its Code of Conduct, depending on the severity of the violation. One of these measures can include suspension of membership. A 2-year suspension from GARP's membership rolls means that the individual would not be considered a member in good

standing for that period and would lose access to the benefits and recognition that come with GARP membership.

Options A, C, and D are not standard disciplinary measures listed by GARP for violations of its Code of Conduct. GARP does not typically impose fines or require reexamination as a direct consequence of ethical violations. Instead, GARP focuses on upholding the integrity of the risk management profession, which may involve suspensions or other actions that reflect the seriousness of maintaining professional standards.