Review

0%

0
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0:00
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0:03
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Your Answers:

Vignette

TOPIC: PORTFOLIO MANAGEMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

John Robinson is an investment consultant specializing in fixed-income credit strategies. He meets with his client, Ana Smith, a pension fund portfolio manager.
Robinson describes a credit valuation model based on default probability and recovery rate that he uses to estimate credit spreads. Using ExtraWire Inc. as an example, he notes that the company has an outstanding second lien bank loan maturing in three years with a spread of 208 bps. ExtraWire is considering issuing a new senior unsecured bank loan with the same maturity. The average historical corporate debt recovery rate is 29% for second lien loans and 44% for senior unsecured bank loans. Robinson estimates the credit spread for the new loan.
Next, Robinson shows how credit default swap (CDS) contracts of the same issuer can be used for portfolio strategies given a specific credit spread view. As an example, he structures a long–short duration-neutral strategy starting with a $20 million notional, 10-year CDS contract. He estimates the return of the strategy where the 5-year CDS spread decreases by 5 bps and the 10-year CDS spread increases by 10 bps from their current levels shown in Exhibit 1.

Exhibit 1

	Current CDS Spread	CDS Effective Spread Duration
5 years	125 bps	4.889
10 years	170 bps	8.375

Smith and Robinson discuss tail risk management and value-at-risk (VaR) models in the context of a defined benefit pension fund. The fund's portfolio contains embedded options, and Smith asks Robinson how to estimate the expected 1-month loss on the portfolio if losses exceed the VaR threshold.
Smith considers buying a bond issued by LotsaStorage Inc. that has an effective spread duration of 7 and a credit spread of 250 bps. She wants to understand the impact of a change in the credit spread on the bond's expected return. Assuming a 40% recovery rate and a 1.5% annualized probability of default, Robinson computes the expected excess spread return if the bond is held for one year and the credit spread falls to 225 bps.

1 Multiple Choice 0 / 1 point

The credit spread for ExtraWire's new senior unsecured bank loan is *closest* to:

- 1.08%.
- 1.37%.
- 1.64%.

× (no answer)

Correct Answer: **1.64%.**

2 Multiple Choice 0 / 1 point

The net return of the long–short duration-neutral strategy in Robinson's CDS spread example is *closest* to:

- $83,750.
- $251,250.
- $370,682.

× (no answer)

Correct Answer: **$251,250.**

3 Multiple Choice 0 / 1 point

Robinson's response to Smith regarding how to *best* estimate the loss for the defined benefit pension fund is that she should use:

- relative VaR based on historical simulation.
- conditional VaR based on Monte Carlo analysis.
- incremental VaR based on the parametric method.

× (no answer)

Correct Answer: **conditional VaR based on Monte Carlo analysis.**

4 Multiple Choice 0 / 1 point

The expected excess spread return on the LotsaStorage bond is *closest* to:

- 165 bps.
- 335 bps.
- 365 bps.

× (no answer)

Correct Answer: **335 bps.**

Vignette

TOPIC: PORTFOLIO CONSTRUCTION
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Kayla Maxwell is an investment consultant serving insurance companies and banks.
Maxwell meets with Jason Brown, who is the chief financial officer of a publicly traded life insurance company, Safety Inc. Brown expects a significant change in the composition of total product revenue in the next two years as shown in Exhibit 1. Maxwell evaluates the effect of these changes on Safety's risk tolerance.

Exhibit 1

Product	Current Composition (% of Total Product Revenue)	Expected Composition (% of Total Product Revenue)
Whole and term life insurance	28%	16%
Universal life insurance	31%	23%
Variable life insurance	7%	19%
Fixed annuities	19%	13%
Variable annuities	15%	29%
Total	100%	100%

Brown asks Maxwell to review Safety's strategic financial plan for the next three years. Brown is interested whether certain items on the plan might be viewed as contributing factors to systemic risk by Safety's

regulator. He asks Maxwell to review the following three items:

Item 1: Safety will liquidate 5% of its high-yield bond holdings and use the proceeds to buy short-term US Treasuries in the next three months.

Item 2: Safety will reduce off-balance-sheet guarantees by 25% by the end of next year.

Item 3: Safety plans to increase the amount of repurchases of common equity by 5% annually.

Maxwell next prepares a presentation for another client, Affiliate Bancorp, a publicly-traded bank. Maxwell calculates the interest rate sensitivity and volatility of Affiliate's equity capital using the information shown in Exhibit 2.

Exhibit 2

Equity capital ratio	10%
Modified duration of assets	2.2
Modified duration of liabilities	1.6
Change in yield on liabilities per 1% change in yield on asset portfolio	75 bps
Market capitalization ($ billion)	8

Affiliate's CFO is evaluating a recent proposal that increases the prepayment penalties on new commercial loans made by the bank. Maxwell researches the effect of this proposal on the volatility of Affiliate's equity capital.

5 Essay 0 / 3 points

Determine the *most likely* effect on Safety's risk tolerance of the expected change in the composition of total product revenue.
(Decrease, No effect, Increase)
Justify your response.

(no answer)

Feedback

General feedback
Exhibit 1 shows that Brown expects the total contribution of variable-rate products will increase from 22% to 48% (or implicitly the contribution of fixed-rate products will decrease). Since variable-rate products shifts the investment risk from the insurance company to policyholders through separate accounts, the insurance company's risk burden should decline resulting in higher risk tolerance.
A similar argument uses the mathematical framework of equity capital volatility. Variable annuities increase the correlation between changes in liabilities and assets while diminishing the relevance of volatilities of changes in liabilities and assets. This results in lower equity volatility and greater investment flexibility provided by the insurance regulators.

6 Essay 0 / 3 points

Determine the item from Safety's strategic financial plan that its regulator should view as a factor contributing to systemic risk.
(Item 1, Item 2, Item 3)
Justify your response.

(no answer)

Feedback

General feedback
Regulators are intensely focused on capital adequacy, liquidity and leverage to mitigate systemic or contagion risk. Item 3 is the only item in the strategic financial plan that will most likely to contribute to systemic risk because larger repurchase amounts imply lower liquidity (since repurchases reduce the cash balance of the firm) and higher leverage (due to lower equity capital). Consistently, one of the requirements that regulators have imposed to bolster the financial system post 2008–2009 is limiting payout of dividends and repurchases of common equity.

Other items are unlikely to be contributing risk factors from Safety's regulator's perspective because Item 1 increases the quality of Safety's holdings, implying higher liquidity and capital adequacy, and Item 2 implies lower leverage.

7 Essay 0 / 3 points

Calculate the market value (in $) of Affiliate's equity capital if the yield on its asset portfolio immediately declines by 20 bps.

(no answer)

Feedback

General feedback

Maxwell needs to calculate the modified duration of Affiliate's equity capital (D_E^*) using the equation below:

$D_E^* = (A/E)\, D_A^* - (A/E - 1)\, D_L^* (\Delta i/\Delta y)$

where

D_A^*: modified duration of assets

D_L^*: modified duration of liabilities

$\Delta i/\Delta y$: % change in yield on liabilities to 1% change in yield on asset portfolio

A/E: ratio of assets to equity

The vignette provides that $D_A^* = 2.2$, $D_L^* = 1.6$ and $\Delta i/\Delta y = 0.75$. Also, 10% equity capital ratio (E/A), implies 10 for ratio of assets to equity (1/10% = 10).

Therefore

$D_E^* = (A/E)\, D_A^* - (A/E - 1)\, D_L^* (\Delta i/\Delta y)$

$D_E^* = 10*2.2 - 9*1.6*0.75 = 11.2$

For a 20 bps decline in the yield of asset portfolio, the market value of expected to increase by 2.24% (11.2*0.2%= 2.24%).

Therefore, the market value of Affiliate's equity will become $8,179,200,000 ($8b*1.0224 = $8.1792b)

8 Essay 0 / 3 points

Determine the *most likely* effect of the prepayment penalty proposal on the volatility of Affiliate's equity capital.

(Decrease, No effect, Increase)

Justify your response.

(no answer)

Feedback

General feedback

Loan prepayments accelerate when interest rates decline. All else constant, declining interest rates will increase the value of fixed-rate liabilities of the bank and reduce the value of the bank's equity. Banks can offset this reduction by requiring prepayment penalties on its loans. In other words, increase in the value of liabilities will be offset (at least partially) by an increase in assets of the bank (prepayment penalty). Imposing prepayment penalties strengthens the correlation between the value of Affiliate's assets and the value of its liabilities, which will lower the volatility of Affiliate's equity.

Vignette

TOPIC: ETHICAL AND PROFESSIONAL STANDARDS
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Adrianne Grayson, CFA, is an equity analyst covering the energy sector for Ellivro Bank. Grayson writes both company research reports and industry sector reports. She is recognized as an expert on the sustainable energy industry.

An energy industry trade group that publishes a newsletter on sustainable energy offers Grayson an assignment to write articles, independent of her work at Ellivro. Grayson would receive compensation for each article she writes but the articles would not include stock recommendations.

Ellivro allows each equity analyst to trade the securities of the companies they individually cover, provided the analyst does not trade during a 5-day blackout period beginning at the time the analyst's research report on the company is published. Employees are also required to submit all securities holdings for compliance review at the end of each quarter.

Moclon Power is a large-cap company covered by Grayson's colleague, Scott Meero, a widely respected analyst. Meero publishes a report in which he changes his recommendation on Moclon to "sell". Two days after Meero's report is published, Grayson purchases shares of Moclon in her personal account.

Grayson decides to leave Ellivro to start her own independent research firm. At her new firm, Grayson is approached separately by three energy companies to author issuer-paid research reports. The companies make the following compensation offers:

Company A: €6,000 per quarter for publishing a minimum of one report each quarter

Company B: €1,000 per published report, provided the report is approved by the energy company

Company C: €3,000 plus company stock warrants per published report, regardless of the recommendation

Grayson notices that there is a lack of coverage on penny stocks in the energy sector, and she wants to increase the visibility of such lesser-known and cheaply priced companies. She creates a weekly newsletter for paid subscribers, providing both fundamental and technical analysis of penny stocks. In the newsletter, Grayson also provides facts and opinions about "hot" penny stock picks and other topics that are commonly discussed on popular online trading forums. She notices that, as her subscriber numbers grow, the trading volume of the penny stocks she covers increases.

9 Multiple Choice 0 / 1 point

According to the Standards, must Grayson obtain written consent from Ellivro to accept the offer from the industry trade group?

- Yes
- No, because the industry trade group is not a competitor of Ellivro
- No, because she will not make stock recommendations in the articles

× (no answer)

Correct Answer: **Yes**

10 Multiple Choice 0 / 1 point

Did Grayson comply with the Standards with regard to her recent purchase of Moclon Power shares?

- Yes
- No, because her trade was contrary to Ellivro's recommendation
- No, because she purchased the shares less than five days after Meero's report was published

× (no answer)

Correct Answer: **Yes**

11 Multiple Choice 0 / 1 point

According to the Standards, which company's issuer-paid research offer is Grayson permitted to accept?

- Company A
- Company B
- Company C

✕ (no answer)

Correct Answer: **Company A**

12 Multiple Choice 0 / 1 point

With respect to her newsletter covering penny stocks, does Grayson violate the Standard relating to market manipulation?

- No
- Yes, because she engages in transaction-based manipulation
- Yes, because she engages in information-based manipulation

✕ (no answer)

Correct Answer: **No**

Vignette

TOPIC: PORTFOLIO MANAGEMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Shubhi Dash advises institutional investors on index-based equity strategies. She meets with two clients: Sonir Insurance and Kasmi Asset Management.
Sonir Insurance is a company with incorporation and operations in a jurisdiction that requires realized capital gains and losses in pooled investment vehicles to be passed through to investors. Sonir would like to add a pooled investment vehicle to their investment portfolio that would offer high tax efficiency. Dash considers Sonir using either a mutual fund or an ETF.
Kasmi Asset Management manages several developed and emerging market index-based equity funds. Dash reviews the performance of Fund 1 and Fund 2. Both use full replication and are benchmarked to the S&P 500. The S&P 500 index had a return of –0.54% over the last 12-month period. Dash gathers the relevant information regarding the two funds in Exhibit 1 to evaluate the outperformance of Fund 2 relative to Fund 1.

Exhibit 1

	Fund 1	Fund 2
12-month total return	–0.60%	–0.52%
Cash holdings	0.12%	2.13%
Expense ratio	0.05%	0.08%

Kasmi would like to create a new global fund benchmarked to the FTSE Global All Cap Index. The index has over 9,000 constituents and Dash models a full replication of the index. He observes that the tracking error has a pattern where it initially decreases as more stocks are added to the fund, but increases as the fund's portfolio approaches full replication.
Kasmi's emerging markets index-based equity fund is benchmarked to the MSCI Emerging Markets Index and has built up a cash surplus. The portfolio's beta has drifted away from its target and Dash proposes using one of the following derivatives overlay strategies to fix this deviation:

Strategy 1: A futures contract on the MSCI Emerging Markets Index
Strategy 2: An equity index swap, tailored to the MSCI Emerging Markets Index

13 Essay 0 / 3 points

Determine the *most* suitable pooled investment vehicle for Sonir.
(Mutual fund, ETF)
Justify your response.

(no answer)

Feedback

General feedback
All else equal, for jurisdictions that require capital gains and losses to be passed through to investors like the US, an ETF has greater tax efficiency than a similarly managed mutual fund. Managers of mutual funds must sell their portfolio holdings to fulfill shareholder redemptions, creating a taxable event where gains and losses are realized. ETFs have the advantage of accommodating those redemptions through an in-kind delivery of stock, which is the redemption process. Capital gains are not recorded when a redemption is fulfilled through an in-kind delivery of securities, so the taxable gain/loss passed to the investor becomes smaller.

14 Essay 0 / 3 points

Explain the *most likely* reason for Fund 2 outperforming Fund 1.

(no answer)

Feedback

General feedback
Fund 2 holds significantly more cash (2.13%) compared to Fund 1 (0.12%). During a period where the S&P 500 generated a negative return (–0.54%), holding a larger proportion of cash would reduce the negative impact on the fund's performance. The effect of cash drag on portfolio value is negative when the market is rising and positive when it is falling.
The difference in expense ratios between Fund 1 (0.05%) and Fund 2 (0.08%) is minimal and unlikely to significantly affect performance. The slightly higher expense ratio of Fund 2 would actually slightly reduce its returns, making it an unlikely reason for the outperformance.

15 Essay 0 / 3 points

Explain the *most likely* reason for the tracking error pattern observed in modeling Kasmi's global fund.

(no answer)

Feedback

General feedback
With respect to the choice between index replication versus sampling, as the number of securities held increases, tracking error decreases because the portfolio gets closer to replicating the index perfectly. Yet as the portfolio manager adds index constituent stocks that are smaller and more thinly traded than average, trading costs
increase. The trading costs can take the form of brokerage fees and upward price pressure as a result of the portfolio's purchases. These transaction costs can depress performance and start to impose a small negative effect on tracking effectiveness. As the portfolio manager moves to the least liquid stocks in the index, transaction costs begin to dominate and tracking error increases again. Thus, for an index that has some constituent securities that are relatively illiquid, the conceptual relationship between tracking error and the number of securities held is U-shaped.
Despite their preference to realize the benefits of pure replication of an index, portfolio managers often find it impractical to hold all the constituent securities. Some equity indexes have a large number of constituents, and not all constituents offer high trading liquidity. This can make trading expensive, especially if a portfolio manager needs
to scale up the portfolio. Brokerage fees can also become excessive if the number of constituents is large.

16 Essay 0 / 3 points

Determine which derivatives overlay strategy has the lowest liquidity risk.
(Strategy 1, Strategy 2)

Justify your response.

(no answer)

Feedback

General feedback
Equity index swaps are less liquid than futures contracts because they are customized OTC instruments. Equity swaps tend to be non-marketable instruments, so once the agreement is made there is not a highly liquid market that allows them to be sold to another party (though it is usually possible to go back to the dealer and enter into an offsetting position).
Futures contracts are highly liquid, with active trading on public exchanges. Among other benefits of futures is the high degree of liquidity in the market, as evidenced by low bid–ask spreads.

Vignette

TOPIC: DERIVATIVES AND RISK MANAGEMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Anna Chen is a US-based private wealth advisor. She works with clients to see how they can use derivatives in managing their portfolios.
Gary Swan is one of Chen's clients. Swan holds 100,000 shares of RLB Inc. The shares were bought at $53 per share and the stock is currently trading at that same level. Chen has a 3-month price target of $58 per share for RLB. The stock is not expected to pay dividends over the investment horizon. Chen gathers the information on 3-month European-style RLB options in Exhibit 1. Option premiums are stated on a per-share basis.

Exhibit 1

Call Premium	Call Delta	Implied Call Volatility	Exercise Price	Put Premium	Put Delta	Implied Put Volatility
$13.17	0.991	25%	$40	$0.31	−0.062	40%
$8.45	0.913	26%	$45	$0.48	−0.116	30%
$4.72	0.697	28%	$50	$1.26	−0.287	25%
$2.59	0.448	32%	$55	$3.46	−0.593	23%
$1.41	0.247	35%	$60	$7.14	−0.865	21%

Chen would like to use RLB options to enhance income. She considers the following option strategies in conjunction with the Swan's position in RLB stock:

Strategy 1: A short position in a 3-month call with an exercise price of $60
Strategy 2: A short position in a 3-month put with an exercise price of $50
Strategy 3: A short position in a 3-month put with an exercise price of $50 and a long position in a 3-month put with an exercise price of $40.

Chen also works with Jennifer Long, a separate client that is interested in executing Strategy 3. Long does not hold any RLB stock and asks Chen to determines the breakeven point of the strategy.
Long is also looking to establish a new option position on the stock of Yellow Spider Corp. Based on her expectations of the volatility of its stock price returns, she decides to buy a 3-month straddle on Yellow Spider stock.

17 Multiple Choice 0 / 1 point

Assuming RLB is at Chen's target price in three months, what is the gain to the Swan's position if he uses Strategy 1?

- $5.00
- $6.41
- $8.41

× (no answer)

Correct Answer: **$6.41**

18 Multiple Choice 0 / 1 point

Which strategy considered by Chen is *most* sensitive to changes in the price of RLB stock?

- Strategy 1
- Strategy 2
- Strategy 3

× (no answer)

Correct Answer: **Strategy 2**

19 Multiple Choice 0 / 1 point

What is the breakeven price per share at expiration if Long executes Strategy 3?

- $49.05
- $50.95
- $51.43

× (no answer)

Correct Answer: **$49.05**

20 Multiple Choice 0 / 1 point

Chen's option strategy for Yellow Spider is consistent with an expectation that the volatility of its stock returns will be:

- below the market consensus.
- equal to the market consensus.
- above the market consensus.

× (no answer)

Correct Answer: **above the market consensus.**

Vignette

TOPIC: ASSET ALLOCATION
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Fabrice McNeal is an investment consultant. McNeal is meeting with representatives of two clients, DBF Foundation and JMK Endowment Fund.

DBF Foundation

DBF is a charitable foundation that uses external managers for investment management. McNeal evaluates the following three governance practices of the foundation:

Practice 1: External managers provide input on the asset allocation policy; the policy is drafted by DBF's investment staff and approved by DBF's investment committee.

Practice 2: External managers provide risk management infrastructure to DBF, including reporting of key indicators that show when risk limits are breached.

Practice 3: For governance audit purposes, an external auditor evaluates the investment portfolio for its efficiency given any constraints within DBF's governing documents.

BF's investment objective is to achieve an expected nominal return of 7.50% per year, while minimizing the standard deviation of returns. The nominal risk-free rate is 3.00%. After separating out the risk-free asset,

McNeal uses mean–variance optimization to determine an efficient frontier of risky assets. Corner portfolios on the risky-asset efficient frontier are shown in Exhibit 1.

Exhibit 1

Corner Portfolio	Expected Nominal Return	Standard Deviation
1	10.30%	21.75%
2	9.60%	17.50%
3	8.20%	15.25%

JMK Endowment Fund

McNeal prepares a risk-budgeting analysis for JMK's investment portfolio. He calculates the marginal contribution to total risk (MCTR) and the absolute contribution to total risk (ACTR) for each asset class. Results are shown in Exhibit 2. The nominal risk-free rate is 3.00% and the Sharpe ratio of the tangency portfolio from a mean–variance optimization is 0.25.

Exhibit 2

Asset Class	Weight	Expected Return	MCTR	ACTR
Bonds	51%	5.00%	8.00%	4.08%
Domestic equities	35%	14.00%	44.00%	15.40%
International equities	14%	8.00%	20.00%	2.80%

21 Essay 0 / 3 points

Determine *one* practice of DBF that is not consistent with effective investment governance. (Practice 1, Practice 2, Practice 3)
Explain how this governance practice should be changed.

(no answer)

Feedback

General feedback

Practice 2 is not consistent with effective investment governance because DBF's investment staff, not external managers, should create the risk management infrastructure and design risk reporting. Regarding responsibility for risk management, effective investment governance is that a third-party resource (i.e., an external manager) manages the portfolio within established risk guidelines, consultants may provide input and support, and the investment staff should create the risk management infrastructure and design reporting.

Practice 1 is consistent with effective investment governance because the governance layers are respected: investment staff drafts the asset allocation policy with input from external managers, and the investment committee approves the policy.

Practice 3 is consistent with effective investment governance because the governance auditor examines the fund’s governing documents, assesses the capacity of the organization to execute effectively within the confines of those governing documents, and evaluates the existing portfolio for its efficiency given the governance constraints.

22 Essay 0 / 5 points

Determine the corner portfolio McNeal should use to meet DBF's investment objective. (Portfolio 1, Portfolio 2, Portfolio 3)
Calculate the percentage of DBF's assets that should be allocated to this corner portfolio.

(no answer)

Feedback

General feedback

Portfolio 2 has the highest Sharpe ratio of the three corner portfolios in Exhibit 1:
Portfolio 1 = (10.3% – 3.0%) / 21.75% = 0.336

Portfolio 2 = (9.6% – 3.0%) / 17.50% = 0.377
Portfolio 3 = (8.2% – 3.0%) / 15.25% = 0.341
Therefore, Portfolio 2, when combined with the risk-free asset, will create an optimal portfolio which minimizes standard deviation at a given level of expected return. The allocation to Portfolio 2 is calculated as follows:
7.5% = 9.6% × w + 3.0% × (1 – w)
where
7.5% = the expected return objective
9.6% = the expected return on Portfolio 2
w = weight of Portfolio 2 in the optimal asset allocation
(1 – w) = weight of the risk-free asset in the optimal asset allocation
Therefore:
7.5 = 9.6w + 3.0 – 3.0w
4.5 = 6.6w
w = 4.5 / 6.6 = 0.6818 ≈ 0.682
The optimal portfolio will have a 68.2% allocation to Portfolio 2 and a 31.8% allocation to the risk-free asset (1 – 0.682). It will have an expected return of 7.5% and a standard deviation of 11.93% (0.6818 × 17.5%), as the risk-free asset has zero standard deviation.

23 Essay 0 / 4 points

Determine if the asset allocation of JMK's portfolio is optimal from a risk-budgeting perspective. (Optimal, Not optimal)
Justify your response.

(no answer)

Feedback

General feedback
The ratio of excess return to MCTR is calculated for each asset class as follows:
Bonds: (5.00% – 3.00%) / 0.08 = 0.25
Domestic equities: (14.00% – 3.00%) / 0.44 = 0.25
International equities: (8.00% – 3.00%) / 0.20 = 0.25
The vignette states that the Sharpe ratio of the tangency portfolio from a mean–variance optimization is also 0.25. Therefore, the asset allocation is optimal from a risk-budgeting perspective because the ratio of excess return to MCTR is the same for all three asset classes and matches the Sharpe ratio of the tangency portfolio.
An asset allocation is optimal from a risk-budgeting perspective when the ratio of excess return (over the risk-free rate) to MCTR is the same for all assets and matches the Sharpe ratio of the tangency portfolio.

Vignette

TOPIC: PORTFOLIO CONSTRUCTION
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Jim Wayne is a portfolio manager at Global Investment Advisors (GIA). Recently, Wayne hired Sara Brown, who just completed her 12-month rotational program. Wayne and Brown are meeting to discuss the fixed-income markets and how their team will be advising clients.
During the meeting, Brown inquires about Wayne's method for calculating the expected return of a bond portfolio. Wayne explains the various return components that contribute to the total expected return of a bond portfolio and then provides an example using the portfolio of a client, the EZ Company. Selected data for EZ Company's bond portfolio is provided in Exhibit 1.

Exhibit 1

Average bond coupon payment (per $100 par value)	$6.75
Coupon frequency	Annual
Investment horizon	1 year
Current average bond price	$94.20
Expected average bond price in one year (assuming an unchanged yield curve)	$97.35

Average bond convexity in one year	18
Average bond modified duration in one year	3.70
Expected change in average benchmark YTM	0.26%
Expected change in spread	–0.10%

Market volatility has increased over the past several months due to the expectation that the central bank will raise interest rates. Wayne wants to discuss a portfolio strategy he could use to best balance his clients' portfolios against the two main sources of interest rate risk: cash flow reinvestment risk and market price risk. Wayne states that many of GIA's clients have fixed-income portfolios that are constructed to immunize future liabilities. Brown tells Wayne that she recalls this topic from her rotational program and makes the following comments:

Comment 1: Effective duration must be used to estimate the interest rate sensitivity of Type II, III, and IV liabilities.

Comment 2: To maximize convexity, a manager should use a laddered strategy rather than a bullet or a barbell strategy to build a client's fixed-income portfolio.

24 Multiple Choice 0 / 1 point

The expected rolling yield of EZ Company's bond portfolio over the one-year investment horizon is *closest* to:

- 9.17%.
- 10.09%.
- 10.51%.

× (no answer)

Correct Answer: **10.51%.**

25 Multiple Choice 0 / 1 point

The combined expected return for EZ Company's bond portfolio due to the expected changes in benchmark YTM and spread is *closest* to:

- –1.49%.
- –0.59%.
- 0.60%.

× (no answer)

Correct Answer: **–0.59%.**

26 Multiple Choice 0 / 1 point

Given his objective related to the two main sources of interest rate risk, which of the following strategies should Wayne recommend to his clients?

- Bullet portfolio
- Barbell portfolio
- Laddered portfolio

× (no answer)

Correct Answer: **Laddered portfolio**

27 Multiple Choice 0 / 1 point

Is either of Brown's comments *most likely* correct?

- No
- Yes, Comment 1 is correct
- Yes, Comment 2 is correct

× (no answer)

Correct Answer: **Yes, Comment 1 is correct**

Vignette

TOPIC: DERIVATIVES AND RISK MANAGEMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Jacob Smith is a financial advisor meeting with two US-based clients. Both clients have a global equity mandate and most of their non-US investments are denominated in EUR and GBP.

Client A

Client A has inherited USD 100,000 and wants to use these assets to invest in an emerging market. Smith tells the client that carry trades between the USD and certain emerging market countries currently appear attractive. He reviews the data for three emerging countries in Exhibit 1 and recommends implementing a carry trade between one of the countries' currencies and the USD. The 1-year US interest rate is 1%.

Exhibit 1

	Country X	Country Y	Country Z
1-year interest rate	5%	6%	7%
Exchange rate Bid/Ask (number of USD per 1 unit of local currency)	0.5000 / 0.5100	0.2000 / 0.2100	0.0200 / 0.0220
Annual exchange rate volatility	15%	15%	20%

Smith and Client A next discuss the performance of the client's UK equity investments. The beginning and ending values of Client A's GBP-denominated investments for the most recent year, along with selected market data, are shown in Exhibit 2. There were no cash flows into or out of the portfolio during the year. Client A asks what his return would have been for the year if the GBP was unhedged.

Exhibit 2

	Beginning of Year	End of Year
Value of investments	GBP 100,000	GBP 110,000
USD/GBP spot exchange rate	1.2500	1.4286
12-month forward points	10	9

Client B

Client B has a GBP-denominated equity portfolio. Given the volatility of this portfolio, Smith rebalances the currency hedge each month using forward contracts. Smith chooses between hedge ratios of 90%, 100%, and 110% each month to best take advantage of his short-term USD/GBP forecast. Today, last month's hedge settles and the portfolio is valued at GBP 1,100,000. Smith believes that the GBP will appreciate against the USD over the next month and decides what new hedge to put in place.

28 Essay 0 / 5 points

Identify which emerging market's currency is *most* appropriate for Client A's carry trade with the USD. (Country X, Country Y, Country Z)
Justify your response with *two* reasons.
Note: Each justification should be in a separate paragraph.

(no answer)

Feedback

General feedback

Smith should select Country X for the carry trade. With a US rate of 1% per year and a Country X rate of 5%, there is the potential for a 4% excess return on the carry trade (if the exchange rate does not change). Country X has the lowest bid/ask spread (0.50/0.51 or 0.01/0.50 = 2%) of the three

countries, and there would still be a 2% potential excess return after deducting the spread from the interest rate differential.
While the other two countries have higher potential returns from the carry trade (Country Y has a rate of 6% and a potential excess return of 5%, Country Z has a rate of 7% and a potential excess return of 6%), their respective bid-ask spreads of 5% and 10% would easily wipe out any potential profit on the trade – after accounting for the spread, the potential excess return would be 0% for Country Y and –4% for Country Z.
Country X also has the lowest annual volatility (tied with Y and lower than Z), and this is important as a carry trade exposes Smith to currency risk.

29 Essay 0 / 3 points

Calculate the USD return of Client A's GBP-denominated investments for the most recent year if the GBP were unhedged.

(no answer)

Feedback

General feedback
In foreign currency (GBP) terms, the portfolio return is (110,000 – 100,000)/100,000 = 10%.
The currency return (P/B), where the price currency, P, is the USD, and the base currency, B, is the GBP, is:
(1.4286 – 1.25)/1.25 = 14.288%
$R_{DC} = (1 + R_{FC})(1+R_{FX}) – 1$
$R_{DC} = (1.10)(1.14288) – 1 = 0.257168$ or 25.72%
Alternatively, candidates might add the currency return and the GBP asset return as follows:
14.288% + 10% = 24.288% ≈ 24.29%

30 Essay 0 / 4 points

Determine which of the following hedge ratios Smith should use to rebalance Client B's GBP-denominated equity portfolio.
(90%, 100%, 110%)
Justify your response.

(no answer)

Feedback

General feedback
A hedge ratio of 90% (i.e., sell less than GBP 1,100,000 forward) will profit from an appreciating GBP. Client B is long GBP in his equity investment and a hedge ratio of 90% will lock in the current 1-month forward rate on only 90% × 1,100,000 = GBP 990,000, and the remaining exposure of GBP 110,000 will be valued at a higher exchange rate against the USD in one month if Smith's forecast is correct. Relative to a full hedge (100% hedge ratio), Client B's equity portfolio will outperform.
If Smith uses a hedge ratio of 100%, the entire portfolio would be locked in at the current 1-month forward rate and thus would not benefit from the appreciation in the GBP. A hedge ratio of 110% would lock in 110% of the portfolio value at the current 1-month forward rate, which would be lower than the rate Smith expects at the end of the month – so a 110% hedge ratio would underperform relative to a full hedge.

Vignette

TOPIC: PORTFOLIO MANAGEMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Leah Pham is a portfolio manager at a large UK-based asset management firm. She is reviewing the firm's long-only Equities Fund (the EQ Fund) and the new market-neutral Long/Short Fund (the LS Fund).
The EQ Fund has €2.2 billion of assets under management (AUM). The maximum position size in an individual stock is determined by three independent constraints:
Allocation: 0.4% of the fund's AUM
Liquidity: 10% of the stock's average daily trading volume
Index weight: 10 times the stock's weight in the benchmark index
Pham is reviewing Slava Corporation, which has a market capitalization of €1.2 billion and a weight in the EQ Fund's benchmark index of 0.017%. The average daily trading volume is 1% of Slava's market capitalization. Pham determines the EQ Fund's maximum position size in Slava.
Next, Pham examines the three companies in Exhibit 1 based on a growth-at-a-reasonable-price (GARP) approach.

Exhibit 1

	Share Price	12-month Forward EPS	3-year Annual EPS Growth Forecast
Company A	€7	€1.0	5%
Company B	€6	€0.5	12%
Company C	€16	€2.0	10%

The EQ Fund is fully invested in equities, but is considering an allocation to cash. Pham collects in Exhibit 2 the absolute risk and active risk of the current portfolio and three alternative portfolios. Each alternative portfolio has the same relative weighting of individual equities and differs only in its allocation to cash.

Exhibit 2

	Current Allocation	Portfolio 1	Portfolio 2	Portfolio 3
Absolute risk	9.5%	11.0%	7.5%	8.9%
Active risk	2.5%	1.7%	5.6%	2.1%

Pham is preparing marketing materials for the LS Fund. She wishes to include investment characteristics that would be achieved by this fund, and considers the following list:

Characteristic 1: A net exposure that is greater than 100%
Characteristic 2: Lower implementation costs than for a long-only portfolio
Characteristic 3: A greater ability to diversify across risk factors than with a long-only portfolio

31 Multiple Choice 0 / 1 point

Given the three constraints, the EQ Fund's maximum position size in Slava is:

- €1.2 million.
- €3.7 million.
- €8.8 million.

× (no answer)

Correct Answer: **€1.2 million.**

32 Multiple Choice 0 / 1 point

Based on the PEG ratio, which of the following stocks that Pham examines would be *most* attractive?

- Company A
- Company B
- Company C

× (no answer)

Correct Answer: **Company C**

33 Multiple Choice 0 / 1 point

Which of the alternative portfolios for the EQ Fund likely has the *highest* allocation to cash?

- Portfolio 1
- Portfolio 2
- Portfolio 3

× (no answer)

Correct Answer: **Portfolio 2**

34 Multiple Choice 0 / 1 point

Which of the characteristics from Pham's list would *most likely* be achieved by the LS Fund?

- Characteristic 1
- Characteristic 2
- Characteristic 3

× (no answer)

Correct Answer: **Characteristic 3**

Vignette

TOPIC: PERFORMANCE MEASUREMENT
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Lucas Toldo is an investment consultant for an endowment that supports marine life research. He is evaluating two portfolios held by the endowment: an equity portfolio (Atlantic) and a fixed income portfolio (Pacific). Both are actively managed by external managers. Toldo prepares a macro attribution analysis for each portfolio to explain to the endowment's board how performance was achieved over the past year.

Atlantic Portfolio

Toldo uses the Carhart model to quantify the impact of investment decisions by considering the sensitivity of Atlantic to market (RMRF), size (SMB), value (HML), and momentum (WML) factors. He determines the active return for the portfolio was 3.12%. Toldo presents factor attribution results in Exhibit 1 to the endowment's board.

Exhibit 1

Factor	Sensitivity			Return
	Portfolio	Benchmark	Difference	
RMRF	1.04	1.00	0.04	3.40%
SMB	0.17	0.28	–0.11	–4.90%
HML	–0.12	–0.07	–0.05	5.02%
WML	–0.10	0.21	–0.31	–7.08%

Toldo explains that the Atlantic manager's strategy relies on a market pricing inefficiency. The board asks whether the inefficiency can last long enough to support future investment performance. To address the board's question, Toldo considers what characteristics he should evaluate in assessing the manager's capacity to use the market pricing inefficiency in its strategy.

Pacific Portfolio

Next, Toldo analyzes the interest rate and sector allocation decisions made by Pacific's manager during a period when the yield curve was upward sloping. During the evaluation period:

- The portfolio held only government and corporate bonds.
- The manager was overweight the short end of the curve and the corporate sector.
- The portfolio benchmark had positive returns in each duration bucket.

The portfolio's duration is 8.32 and the benchmark's duration is 9.15. Toldo presents the attribution results in Exhibit 2.

Exhibit 2

Duration Effect	Curve Effect	Total Interest Rate Allocation	Sector Allocation	Bond Selection	Total
–0.72%	0.18%	–0.54%	0.17%	0.12%	–0.25%

35 Essay 0 / 4 points

Determine whether *each* of the following factors had a positive or negative contribution to the active return of the Atlantic portfolio:
i. HML
ii. WML
(Positive, Negative)
Justify your response for *each* factor.
Note: Each justification should be in a separate paragraph.

(no answer)

Feedback

General feedback
The value factor or HML (High Minus Low) has negative sensitivities for both the portfolio (–0.12) and the benchmark (–0.07). This means that the portfolio and the benchmark had a growth bias. However, the portfolio's orientation to growth stocks was 0.05 higher than that of the benchmark in absolute terms. In other words, the manager had less exposure to the value factor relative to the benchmark. Therefore, the manager subtracted value from the portfolio (0.05 × 5.02% = –0.25%) by weighting less toward value stocks which had a positive factor return (5.02%).
The momentum factor or WML (Winners Minus Losers) has a negative sensitivity for the portfolio (–0.10) but a positive sensitivity for the benchmark (0.21). This means that the portfolio had a contrarian bias whereas the benchmark had a momentum bias. The difference between both biases was 0.31 in absolute terms. In other words, the manager had less exposure to the momentum factor relative to the benchmark. Therefore, the manager added value to the portfolio (0.31 × 7.08% = 2.19%) by weighting less toward winners which had a negative factor return (–7.08%).

36 Essay 0 / 4 points

Discuss *two* characteristics that Toldo should evaluate in assessing the manager's capacity to use the inefficiency in its strategy.
Note: Each discussion should be in a separate paragraph.

(no answer)

Feedback

General feedback
Inefficiencies can be behavioral or structural. A behavioral inefficiency is a perceived mispricing (temporary) created by the actions of other market participants. A structural inefficiency (permanent) is a perceived mispricing created by external or internal rules and regulations.
To address the board's question regarding whether the market inefficiency will last long enough, Toldo's analysis needs to consider three aspects of capacity related to the inefficiency:

- The level of assets the portfolio can absorb without a dilution of returns: Does the inefficiency provide a sufficient frequency of opportunity and level of return to cover costs and fees?
- The number of opportunities or securities available: Does the inefficiency generate a repeatable source of return without requiring a different process of skill set?
- The ability to transact in a timely manner at or near market price: Is the inefficiency sustainable to allow the ability to trade in a timely manner at or near market price?

37 Essay 0 / 4 points

Describe, based on the attribution analysis and the Pacific manager's decisions, how *each* of the following *most likely* changed during the evaluation period:
i. The shape of the yield curve
ii. Credit spreads
Note: Each description should be in a separate paragraph.

(no answer)

Feedback

General feedback
The portfolio benefited from changes in the shape of the yield curve. Given the manager's overweighting in the short end of the curve, we can infer that the curve steepened. The slope steepening caused short-term yields to decrease more than long-term yields. Therefore, 18 bps were gained as a result of the manager's decision to overweight the short end of the curve.
The portfolio also benefited from changes in the level of credit spreads. Given the manager's overweighting in the corporate sector, we can infer that credit spreads narrowed. The spread narrowing reduced the cost of capital which, in turn, improved earnings and caused corporate bonds to outperform government bonds. Therefore, 17 bps were gained as a result of the manager's decision to overweight the corporate sector.

Vignette

TOPIC: ASSET ALLOCATION
TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS

Sally Wilson is a market strategist for a global asset manager. She meets with a portfolio manager at her firm to discuss her forecast for fixed-income assets.
Wilson and the manager first discuss Country A's economic outlook. Wilson forecasts that Country A's output gap has closed which she believes will lead to an overheating economy. Based on Wilson's forecast of the changing business cycle, the portfolio manager considers if they should change their portfolio's allocation to Country A high-yield corporate bonds.
The portfolio manager also owns Country B default-free government bonds. Wilson notes that Country B is in the late stage of a contraction and there is downward pressure on wages and prices. Country B's central bank policy rate target is viewed as credible.
The portfolio manager tells Wilson that they are concerned about the effect of anticipated persistent loose monetary and fiscal policies on real rates and expected inflation in Country B. Wilson considers the combined impact of Country B's monetary and fiscal policies.
Lastly, Wilson reviews her estimates for Country Z. She anticipates a change in monetary policy for Country Z in the coming year and uses the Taylor rule to project the path of future policy rates. The estimates Wilson uses for the neutral real policy rate, target inflation rate, expected real GDP growth, and trend real GDP growth rates have not changed. She does though change her estimate for the expected inflation rate and now forecasts it to increase by 50 bps. She recalculates the target nominal policy rate under the Taylor rule using her new estimate.

38 Multiple Choice 0 / 1 point

Based on Wilson's forecast for Country A, the portfolio manager's allocation to Country A's high-yield bonds should be:

- decreased.
- unchanged.
- increased.

× (no answer)

Correct Answer: **decreased.**

39 Multiple Choice 0 / 1 point

The yield curve for Country B's default-free government bonds is *most likely*:

- downward sloping.
- flat.
- upward sloping.

✕ (no answer)

Correct Answer: **upward sloping.**

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40 Multiple Choice 0 / 1 point

Which of the following is *most likely* to occur if the portfolio manager's concerns about monetary and fiscal policies for Country B are realized?

- High real rates and low expected inflation
- Low real rates and high expected inflation
- High real rates and high expected inflation

✕ (no answer)

Correct Answer: **High real rates and high expected inflation**

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41 Multiple Choice 0 / 1 point

Given Wilson's new estimate for the expected inflation rate, the change in Country Z's target nominal policy rate under the Taylor rule is:

- less than 50 bps.
- equal to 50 bps.
- greater than 50 bps.

✕ (no answer)

Correct Answer: **greater than 50 bps.**