Fixed-Income Portfolio Management

共享题干题

【题干】Megan Easton is a portfolio manager with Dynamo Investment Partners (Dynamo) and manages a bond portfolio that invests primarily in investment-grade corporate bonds with a limited amount of US government bonds. Easton meets with John Avelyn, a newly hired analyst, to discuss the structure and management of this investment portfolio, as well as some possible changes to the portfolio composition.Easton begins the meeting by stating her belief that the credit spread is the single most important measure that investors use when selecting bonds. Among the various credit spread measures, including the G-spread, I-spread, and Z-spread, Easton prefers the G-spread.Easton and Avelyn next discuss credit strategy approaches. Dynamo uses a bottom-up approach that selects bonds with the best relative value from the universe of bonds with similar characteristics. Avelyn comments on the following considerations in a bottom-up approach.Comment 1 Callable debt has a smaller Z-spread than comparable non-callable debt.Comment 2 Benchmark corporate bond issues normally have wider spreads than older bonds of the same issuer.Comment 3 The announcement of a new corporate bond issue often leads to an increase in the credit spread on the existing bonds.Dynamo is changing the bond portfolio's investment constraints so that it can invest up to 20% of the assets in high-yield corporate bonds and 20% in structured financial instruments. Easton makes the following statement about these changes:Liquidity and trading issues for high-yield bonds, such as investment-grade bonds, will be a key consideration in our security selection. Although both high-yield and investment-grade bonds are quoted as spreads over benchmark government bonds, we must be aware that dealers are likely to hold larger inventories of high-yield bonds and their bid－offer spreads will be larger.Avelyn makes the following statements about the differences between investment-grade and high-yield bonds.Statement 1 When default losses are low and credit spreads are relatively tight, high-yield bonds tend to perform more like investment-grade bonds.Statement 2 Investment-grade bonds have greater exposure to credit risk than high-yield bonds.Statement 3 High-yield bonds have more exposure to interest rate risk than investment-grade bonds.Two of the structured financial instruments that Easton and Avelyn are considering for Dynamo's portfolio are collateralized debt obligations (CDOs) and covered bonds. Easton and Avelyn make the following comments about the securities.

Easton:	If the correlation of the expected defaults on the CDO collateral of the senior and subordinated tranches is positive, the relative value of the mezzanine tranche compared with the senior and equity tranches will increase.
Avelyn:	Replacing a portion of the corporate bonds with CDOs will provide meaningful diversification to the investment portfolio.
Avelyn:	Investing in covered bonds will give us the yield increase we are seeking compared with investing in corporate bonds or asset-backed securities.

1.【单项选择题】A benefit of Easton's preferred credit spread measure is that it:

A. provides a good measure of credit spread for bonds with optionality.

B. uses swap rates denominated in the same currency as the credit security.
C. reduces the potential for maturity mismatch.
参考答案：C
【莽学解析】The G-spread is the spread over an actual or interpolated benchmark (usually government) bond. A benefit of the G-spread is that when the duration of the credit security differs from that of the benchmark bond, the yields of two government bonds can be weighted so that their weighted average maturity matches the credit security' maturiy.

2.【单项选择题】Which of the following is most likely to be used when selecting securities based on Dynamo's credit strategy approach?
A. Macro factors
B. Expected excess returns
C. Average option-adjusted spread
参考答案：B
【莽学解析】Analyzing expected excess returns against the expected magnitude of the credit-related risks is key to the bottom-up approach. Once the credit universe has been divided into sectors, the investor identifies the bonds with the best relative value within each sector. If Dynamo decides that two issuers have similar credit-related risks, then it will typically compare credit spread measures and buy the bonds of the issuer with the higher spread because those bonds likely have a higher potential for excess returns. For issuers with different credit-related risk, Dynamo must decide whether the additional spread adequately compensates for the additional credit risk.

3.【单项选择题】Which of Avelyn' comments regarding considerations in the bottom-up approach is most accurate?
A. Comment 1
B. Comment 2
C. Comment 3
参考答案：C
【莽学解析】When an issuer announces a new corporate bond issue, the issuer' existing bonds often decline in value and their spreads widen. This dynamic is often explained by market participants as an effect of increased supply. A related reason is that because demand is not perfectly elastic, new issues are often given a price concession to entice borrowers to buy the new bonds. This price concession may result in all of an issuer' existing bonds repricing based on the new issue' relatively wider spread. A third reason is that more debt issuance may signal an increase in an issuer' credit risk.

4.【单项选择题】Which of Easton's statements about the liquidity and trading characteristics of high-yield and investment-grade bonds is most correct?
A. Dealers generally hold larger inventories of high-yield bonds than investment-grade bonds.
B. Both high-yield and investment-grade bonds are quoted as spreads over benchmark government bonds.
C. The bid－offer spread of high-yield bonds is normally larger than that of investment-grade bonds with similar maturities.
参考答案：C
【莽学解析】Bid－offer spreads are larger for high-yield bonds than for investment-grade bonds

of similar maturity.

5.【单项选择题】Which of Avelyn's statements about the differences between investment-grade and high-yield bonds is accurate?

A. Statement 1

B. Statement 2

C. Statement 3

参考答案：A

【莽学解析】Investment-grade corporate bonds have meaningful interest rate sensitivity, and therefore, investment-grade portfolio managers usually manage their portfolio durations and yield curve exposures closely. In contrast, high-yield portfolio managers are more likely to focus on credit risk and less likely to focus on interest rate and yield curve dynamics. When default losses are low and credit spreads are relatively tight, however, high-yield bonds tend to behave more like investment-grade bonds—that is, with greater interest rate sensitivity.

6.【单项选择题】Which comment regarding CDOs and covered bonds is accurate?

A. Easton's comment

B. Avelyn's first comment

C. Avelyn's second comment

参考答案：A

【莽学解析】CDOs typically include some form of subordination. With subordination, a CDO has more than one bond class or tranche, including senior bond classes, mezzanine bond classes (which have credit ratings between senior and subordinated bond classes), and subordinated bond classes (often referred to as residual or equity tranches). The correlation of expected defaults on a CDO's collateral affects the relative value between the senior and subordinated tranches of the CDO. As correlations increase, the values of the mezzanine tranches usually increase relative to the values of the senior and equity tranches.

【题干】Cécile Perreaux is a junior analyst for an international wealth management firm. Her supervisor, Margit Daasvand, asks Perreaux to evaluate three fixed-income funds as part of the firm's global fixed-income offerings. Selected financial data for the funds Aschel, Permot, and Rosaiso are presented in Exhibit 1. In Perreaux's initial review, she assumes that there is no reinvestment income and that the yield curve remains unchanged.

After further review of the composition of each of the funds, Perreaux notes the following.Note 1 schel is the only fund of the three that uses leverage.Note 2 osaiso is the only fund of the three that holds a significant number of bonds with embedded options.Daasvand asks Perreaux to analyze immunization approaches to liability-based mandates for a meeting with Villash Foundation. Villash Foundation is a tax-exempt client. Prior to the meeting, Perreaux identifies what she considers to be two key features of a cash flow－matching approach.Feature 1 It requires no yield curve assumptions.Feature 2 Cash flows come from coupons and liquidating bond portfolio positions.Two years later, Daasvand learns that Villash Foundation needs $5,000,000 in cash to meet liabilities. She asks Perreaux to analyze two bonds for possible liquidation. Selected data on the two bonds are presented in Exhibit 2.

Exhibit 1. Selected Data on Fixed-Income Funds

	Aschel	Permot	Rosaiso
Current average bond price	$117.00	$91.50	$94.60
Expected average bond price in one year(end of Year 1)	$114.00	$96.00	$97.00
Average modified duration	7.07	7.38	6.99
Average annual coupon payment	$3.63	$6.07	$6.36
Present value of portfolio's assets (millions)	$136.33	$68.50	$74.38
Bond type*			
Fixed-coupon bonds	95%	38%	62%
Floating-coupon bonds	2%	34%	17%
Inflation-linked bonds	3%	28%	21%
Quality*			
AAA	65%	15%	20%
BBB	35%	65%	50%
B	0%	20%	20%
Not rated	0%	0%	10%
Value of portfolio's equity (millions)	$94.33		
Value of borrowed funds (millions)	$42.00		
Borrowing rate	2.80%		
Return on invested funds	6.20%		

* Bond type and Quality are shown as a percentage of total for each fund.

7.【单项选择题】Based on Exhibit 1, which fund provides the highest level of protection against inflation for coupon payments?

A. Aschel

B. Permot

C. Rosaiso

参考答案：B

Exhibit 2. Selected Data for Bonds 1 and 2

	Bond 1	Bond 2
Current market value	$5,000,000	$5,000,000
Capital gain/loss	400,000	–400,000
Coupon rate	2.05%	2.05%
Remaining maturity	8 years	8 years
Investment view	Overvalued	Undervalued
Income tax rate	39%	
Capital gains tax rate	30%	

【莽学解析】Permot has the highest percentage of floating-coupon bonds and inflation-linked bonds. Bonds with floating coupons protect interest income from inflation because the reference rate should adjust for inflation. Inflation-linked bonds protect against inflation by paying a return that is directly linked to an index of consumer prices and adjusting the principal for inflation. Inflation-linked bonds protect both coupon and principal payments against inflation. The level of inflation protection for coupons = % portfolio in floating-coupon bonds % portfolio in inflation-linked bonds:Aschel = 2% 3% = 5%Permot = 34% 28% = 62%Rosaiso = 17% 21% = 38%Thus, Permot has the highest level of inflation protection with 62% of its portfolio in floating-coupon and inflation-linked bonds.

8.【单项选择题】Based on Exhibit 1, the rolling yield of Aschel over a one-year investment horizon is closest to:

A. -2.56%.

B. 0.54%.

C. 5.66%.

参考答案：B

【莽学解析】

$$\text{Rolldown return} = \frac{Bond\ price_{End-of-horizonperiod} - Bond\ price_{begining-of-horizon\ period}}{Bond\ price_{begining-of-horizon\ period}}$$

$$= \frac{\$114.00 - \$117.00}{\$117.00} = -0.0256, \text{ or } -2.56\%$$

$$\text{Rolling yield} = \text{Yield income} + \text{Rolldown return} = 3.10\% - 2.56\% = 0.54\%$$

9.【单项选择题】The levered portfolio return for Aschel is closest to:

A. 7.25%.

B. 7.71%.

C. 8.96%.

参考答案：B

【莽学解析】

The return for Aschel is 7.71%, calculated as follows.

$$r_p = \frac{\left((r_l \times (V_E + V_B) - V_B \times r_B\right)}{V_E}$$

$$= r_l + \frac{V_B}{V_E}(r_l - r_B) = 6.20\% + \frac{\$42.00million}{\$94.33millon}(6.20\% - 2.80\%) = 7.71\%$$

10.【单项选择题】Based on Note 2, Rosaiso is the only fund for which the expected change in price based on the investor's views of yields and yield spreads should be calculated using:

A. convexity.

B. modified duration.

C. effective duration

参考答案：C

【莽学解析】Rosaiso is the only fund that holds bonds with embedded options. Effective duration should be used for bonds with embedded options. For bonds with embedded options, the duration and convexity measures used to calculate the expected change in price based on the investors' views of yields and yield spreads are effective duration and effective convexity. For bonds without embedded options, convexity and modified duration are used in this calculation.

11.【单项选择题】Is Perreaux correct with respect to key features of cash flow matching?

A. Yes.

B. No, only Feature 1 is correct.

C. No, only Feature 2 is correct.

参考答案：B

【莽学解析】Cash flow matching has no yield curve or interest rate assumptions. With this immunization approach, cash flows come from coupon and principal repayments that are expected to match and offset liability cash flows. Because bond cash inflows are scheduled to coincide

with liability cash payouts, there is no need for reinvestment of cash flows. Thus, cash flow matching is not affected by interest rate movements. Cash flows coming from coupons and liquidating bond portfolio positions is a key feature of a duration-matching approach.

12.【单项选择题】Based on Exhibit 2, the optimal strategy to meet Villash Foundation's cash needs is the sale of:

A.100% of Bond 1.

B.100% of Bond 2.

C.50% of Bond 1 and 50% of Bond 2.

参考答案：A

【莽学解析】The optimal strategy for Villash is the sale of 100% of Bond 1, which Perreaux considers to be overvalued. Because Villash is a tax-exempt foundation, tax considerations are not relevant and Perreaux's investment views drive her trading recommendations.

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【题干】Silvia Abram and Walter Edgarton are analysts with Cefrino Investments, which sponsors the Cefrino Sovereign Bond Fund (the Fund). Abram and Edgarton recently attended an investment committee meeting where interest rate expectations for the next 12 months were discussed. The Fund's mandate allows its duration to fluctuate ±0.30 per year from the benchmark duration. The Fund's duration is currently equal to its benchmark. Although the Fund is presently invested entirely in annual coupon sovereign bonds, its investment policy also allows investments in mortgage-backed securities (MBS) and call options on government bond futures. The Fund's current holdings of on-the-run bonds are presented in Exhibit 1.

Over the next 12 months, Abram expects a stable yield curve; however, Edgarton expects a steepening yield curve, with short-term yields rising by 1.00% and long-term yields rising by more than 1.00%.Based on her yield curve forecast, Abram recommends to her supervisor changes to the Fund's holdings using the following three strategies:Strategy 1: Sell the 3-year bonds, and use the proceeds to buy 10-year bonds.Strategy 2: Sell the 5-year bonds, and use the proceeds to buy 30-year MBS with an effective duration of 4.75.Strategy 3: Sell the 10-year bonds, and buy call options on 10-year government bond futures.Abram's supervisor disagrees with Abram's yield curve outlook. The supervisor develops two alternative portfolio scenarios based on her own yield curve outlook:Scenario 1 Sell all bonds in the Fund except the 2-year and 30-year bonds, and increase positions in these two bonds while keeping duration neutral to the benchmark.Scenario 2 Construct a condor to benefit from less curvature in the 5-year to 10-year area of the yield curve. The condor will utilize the same 1-year, 5-year, 10-year, and 30-year bonds held in the Fund. The maximum allowable position in the 30-year bond in the condor is $17million,and the bonds must have equal (absolute value) money duration.Edgarton

Exhibit 1.Cefrino Sovereign Bond Fund Current Fund Holdings of On-the-Run Bo			
Maturity	Coupon/YTM	Market Value	Modified Duration
1-year	0.78%	$10,000,000	0.99
3-year	1.40%	$10,000,000	2.92
5-year	1.80%	$10,000,000	4.74
10-year	2.34%	$10,000,000	8.82
30-year	2.95%	$10,000,000	19.69
Portfolio	1.85%	$50,000,000	7.43

evaluates the Fund's positions from Exhibit 1 along with two of his pro forma portfolios, which are summarized in Exhibit 2:

Exhibit 2. Selected Partial Durations					
Maturity	Beginning Yield Curve	Curve Shift	Current Portfolio Partial PVBP	Pro Forma Portfolio 1 Partial PVBP	Pro Forma Portfolio 2 Partial PVBP
1-year	0.78%	1.00%	0.0020	0.0018	0.0021
3-year	1.40%	1.00%	0.0058	0.0044	0.0061
5-year	1.80%	1.25%	0.0095	0.0114	0.0095
10-year	2.34%	1.60%	0.0177	0.0212	0.0159
30-year	2.95%	1.75%	0.0394	0.0374	0.0394

Lastly, Edgarton reviews a separate account for Cefrino's US clients that invest in Australian government bonds. He expects a stable Australian yield curve over the next 12 months. He evaluates the return from buying and holding a 1-year Australian government bond versus buying the 2-year Australian government bond and selling it in one year.

Exhibit 3. Cefrino Australian Government Bond Portfolio Assumptions for Stable Yield

	Portfolio Strategies	
	Buy-and-Hold Portfolio	**Ride-the-Yield Portfolio**
Investment horizon (years)	1.0	1.0
Bonds maturity at purchase (years)	1.0	2.0
Coupon rate	1.40%	1.75%
Yield to maturity	1.65%	1.80%
Current average portfolio bond price	A$99.75	A$99.9
Expected average bond price in one year for portfolio	A$100.00	A$100.1
Expected currency gains or losses	−0.57%	−0.57%

14.【单项选择题】Based on Exhibit 1 and Abram's expectation for the yield curve over the next 12 months, the strategy most likely to improve the Fund's return relative to the benchmark is to:

A. buy and hold.

B. increase convexity.

C. ride the yield curve.

参考答案：C

【莽学解析】Since Abram expects the curve to remain stable, the yield curve is upward sloping and the Fund's duration is neutral to its benchmark. Her best strategy is to ride the yield curve and enhance return by capturing price appreciation as the bonds shorten in maturity.

15.【单项选择题】Based on Edgarton's expectation for the yield curve over the next 12 months, the Fund's return relative to the benchmark would most likely increase by:

A. riding the yield curve.

B. implementing a barbell structure.

C. shortening the portfolio duration relative to the benchmark.

参考答案：C

【莽学解析】If interest rates rise and the yield curve steepens as Edgarton expects, then shortening the Fund's duration from a neutral position to one that is shorter than the benchmark will improve the portfolio's return relative to the benchmark. This duration management strategy will avoid losses from long-term interest rate increases.

16.【单项选择题】Based on Exhibit 1 and Abram's interest rate expectations, which of the

following strategies is expected to perform best over the next 12 months?
A. Strategy 1
B. Strategy 2
C. Strategy 3
参考答案：B
【莽学解析】In a stable yield curve environment, holding bonds with higher convexity negatively affects portfolio performance. These bonds have lower yields than bonds with lower convexity, all else being equal. The 5-year US Treasury has higher convexity than the negative convexity 30-year MBS bond. So, by selling the 5-year Treasury and purchasing the 30-year MBS, Abram will reduce the portfolio's convexity and enhance its yield without violating the duration mandate versus the benchmark.

17.【单项选择题】The yield curve expectation that Abram's supervisor targets with Scenario 1 is most likely a:
A. flattening yield curve.
B. reduction in yield curve curvature.
C. 100 bps parallel shift downward of the yield curve.
参考答案：A
【莽学解析】Scenario 1 is an extreme barbell and is typically used when the yield curve flattens. In this case, the 30-year bond has larger price gains because of its longer duration and higher convexity relative to other maturities. If the yield curve flattens through rising short-term interest rates, portfolio losses are limited by the lower price sensitivity to the change in yields at the short end of the curve while the benchmark's middle securities will perform poorly.

18.【单项选择题】Based on Exhibit 1, which short position is most likely to be included in the condor outlined in Scenario 2?
A. 1-year $338 million
B. 5-year $71 million
C. 10-year $38 million
参考答案：A
【莽学解析】To profit from a decrease in yield curve curvature, the correct condor structure will be: short 1s, long 5s, long 10s, and short 30s. The positions of the condor will be: short $338 million 1-year bond, long $71 million 5-year bond, long $38 million 10-year bond, and short $17 million 30-year bond.This condor is structured so that it benefits from a decline in curvature, where the middle of the yield curve decreases in yield relative to the short and long ends of the yield curve. To determine the positions, we take the maximum allowance of 30-year bonds of $17 million and determine money duration. Money duration is equal to market value x modified duration divided by 100. 30-year bond money duration = $17 million × 19.69/100 = $3,347,300. The market values of the other positions are:1-year bond: $3,347,300 × 100/0.99 = $338.11 million or $338 million5-year bond: $3,347,300 × 100/4.74 = $70.62 million or $71 million10-year bond: $3,347,300 × 100/8.82 = $37.95 million or $38 million

19.【单项选择题】Based on Exhibits 1 and 2, which of the following portfolios is most likely to have the best performance given Edgarton's yield curve expectations?
A. Current Portfolio

B. Pro Forma Portfolio 1
C. Pro Forma Portfolio 2
参考答案：C
【莽学解析】Given Edgarton's expectation for a steepening yield curve, the best strategy is to shorten the portfolio duration by more heavily weighting shorter maturities. Pro Forma Portfolio 2 shows greater partial duration in the 1- and 3-year maturities relative to the current portfolio and the least combined exposure in the 10- and 30-year maturities of the three portfolios. The predicted change is calculated as follows:Predicted change = Portfolio par amount × partial PVBP × (－curve shift in bps)/100

20.【单项选择题】Based on Exhibit 3, the 1-year expected return of the Buy-and-Hold portfolio for the Cefrino Australian government bond portfolio is closest to:
A. 0.83%.
B. 1.08%.
C. 2.22%.
参考答案：B
【莽学解析】

The total expected return is calculated as:

Total expected return=Yield income+Rolldown return =Rolling yield+E(currency gains or losses).

Return Component	Formula	Buy-and-Hold Portfolio Performance
Yield income	Annual coupon payment/Current bond price	1.40/99.75=1.40%
+Rolldown return	(Bond price$_{\text{end of horizon}}$ − Bond price$_{\text{beginning of horizon}}$) ÷ Bond price$_{\text{beginning of horizon}}$	(100 − 99.75)/99.75=0.25
=Rolling yield	Yield income+Rolldown return	1.40+0.25=1.65%
+E(currency gains or losses)	Given	− 0.57%
=Total expected return		1.08%

21.【单项选择题】Based on Exhibit 3, the implied Australian dollar (A$) 1-year rate, 1-year forward is closest to:
A. 0.15%.
B. 1.95%
C. 2.10%

参考答案：B

【莽学解析】The implied forward rate can be calculated using the yield to maturity (YTM) of the 2-year Ride-the-Yield Curve and 1-year Buy-and-Hold portfolios. F1,1 = [(1.018)2/1.0165] - 1 = 1.95%

【题干】Sanober Hirji is a junior analyst with Northco Securities, which is based in Canada. The institutional clients of Northco are active investors in Canadian coupon-bearing government bonds. Client portfolios are benchmarked to a Canadian government bond index, which is a diverse maturity index portfolio. After reviewing the portfolio of a French institutional client, Hirji evaluates yield curve strategies for Canadian government bond portfolios under various interest rate scenarios. Hirji's supervisor, éliane Prégent, forecasts that Canadian long-term rates will rise and short-term rates will fall over the next 12 months.In contrast, Northco's chief economist forecasts that Canadian interest rates will increase or decrease by 100 basis points over the next 12 months. Based on the chief economist's forecast, Hirji suggests increasing the convexity of the French institutional client's portfolio by selling 10-year bonds and investing the proceeds in a duration-matched barbell position of Canadian government 3-year and long-term bonds. She notes that the duration of the 10-year bonds, along with the durations of the other portfolio bonds, aligns the portfolio's effective duration with that of the benchmark. Selected data on Canadian government bonds are presented in Exhibit 1.

Exhibit 1. Canadian Government Bonds As of 1 January

Security	Effective Duration	Effective Convexity
1-year	0.99	0.007
3-year	2.88	0.118
10-year	9.51	0.701
Long-term	21.30	2.912

(* There is no single convention for how convexity numbers are presented; for example, Bloomberg has historically followed a convention of dividing the "raw" convexity number by 100 (as presented here). However, it is important to use the raw convexity number when estimating returns.)Hirji then considers a strategy to sell some long-term bonds from the French institutional client's portfolio and purchase short maturity at-the-money options on long-term bond futures. The portfolio's duration would remain unchanged. Prégent asks: "How would portfolio performance be affected by this strategy if the yield curve were to remain stable?" Hirji also proposes the following duration-neutral trades for the French institutional client:

Long/short trade on 1-year and 3-year Canadian government bonds

Short/long trade on 10-year and long-term Canadian government bonds

Six months later, Hirji reviews Canadian government bonds for a Malaysian institutional client. Prégent and Hirji expect changes in the curvature of the yield curve but are not sure whether curvature will increase or decrease. Hirji first analyzes positions that would profit from an

increase in the curvature of the yield curve. The positions must be duration neutral, and the maximum position that the Malaysian client can take in long-term bonds is C$150 million. Hirji notes that interest rates have increased by 100 basis points over the past six months. Selected data for on-the-run Canadian government bonds are shown in Exhibit 2.

Exhibit 2. On-the-Run Canadian Government Bonds As of 1 July

Maturity	YTM(%)	Duration	PVBP(C$ millions)
2-year	1.73	1.97	197
5-year	2.01	4.78	478
10-year	2.55	8.89	889
Long-term	3.16	19.60	1,960

Hirji then considers the scenario where the yield curve will lose curvature for the Malaysian institutional client. She notes that a 7-year Canadian government bond is also available in the market. Hirji proposes a duration-neutral portfolio comprised of 47% in 5-year bonds and 53% in 7-year bonds.Finally, Hirji uses the components of expected returns to compare the performance of a bullet portfolio and a barbell portfolio for a British institutional client. Characteristics of these portfolios are shown in Exhibit 3.

22.【单项选择题】Based on Prégent’s interest rate forecast over the next 12 months, the yield curve strategy that would most likely realize the highest profit is:

A. a carry trade.

B. a bullet structure.

C. duration management by buying long-term Canadian bonds.

参考答案：B

【莽学解析】A bullet performs well when the yield curve is expected to steepen. Since Prégent’s forecast is for long rates to rise and short rates to fall, this strategy will add value to the French client’s portfolio by insulating the portfolio against adverse moves at the long end of the curve. If short rates fall, the bullet portfolio gives up very little in profits given the small magnitude of price changes at the short end of the curve.

23.【单项选择题】Based on Exhibit 1, the gain in convexity from Hirji’s suggestion is closest to:

A. 0.423.

B. 1.124.

C. 1.205.

参考答案：A

Exhibit 3. Characteristics of Bullet and Barbell Portfolios

	Bullet Portfolio	Ba
Investment horizon (years)	1.0	1.0
Average annual coupon rate for portfolio	1.86%	1.8
Average beginning bond price for portfolio	C$100.00	C$
Average ending bond price for portfolio (assuming rolldown and stable yield curve)	C$100.38	C$
Current modified duration for portfolio	4.96	4.9
Expected effective duration for portfolio (at the horizon)	4.12	4.1
Expected convexity for portfolio (at the horizon)	14.68	24.
Expected change in government yield curve	–0.55%	–0.

【莽学解析】To maintain the effective duration match, the duration of the 10-year bond sale must equal the total weighted duration of the 3-year and long-term bond purchases.9.51=(Duration of 3-year bond×Weight of 3-year bond) (Duration of long-term bond×Weight of long-term bond)x= weight of 3-year bond(1－x)=weight of long-term bond9.51 =2.88x 21.30(1－x)x=0.64 or 64% The proceeds from the sale of the 10-year Canadian government bond should be allocated 64%to the 3-year bond and 36% to the long-term bond:9.51=(64%×2.88) (36%×21.30)Gain in convexity=(Weight of the 3-year)×(Convexity of the 3-year) (Weight of the long-term bond)×(Convexity of the long-term bond)－(Weight of the 10-year)×(Convexity of the 10-year)Gain in convexity=(64%×0.118) (36%×2.912)－(100%×0.701)=0.42284 or 0.423

24.【单项选择题】The answer to Prégent’s question is that the portfolio would most likely experience:

A.a loss.

B.no change.

C.a gain.

参考答案：A

【莽学解析】Short maturity at- or near-the-money options on long-term bond futures contain a great deal of convexity. Thus, options increase the convexity of the French client’s portfolio. Options are added in anticipation of a significant change in rates. If the yield curve remains stable, the portfolio will experience a loss from both the initial purchase price of the options and the foregone interest income on the liquidated bonds.

25.【单项选择题】Which yield curve forecast will most likely result in the highest profit for Hirji’s proposed duration-neutral trades?

A. Increase in curvature

B. Decrease in curvature

C. Parallel downward shift

参考答案：A

【莽学解析】The trades are also called a condor and employ four positions, much like a butterfly with an elongated body. Each pair of duration-neutral trades would result in a profit if the yield curve adds curvature. The trades at the short end of the curve (going long the 1-year bond and short the 3-year bond) would profit if that end of the curve gets steeper. In addition, the trades at the long end of the curve (going short the 10-year bond and long the long-term bond) would profit if that end of the curve becomes flatter.

26.【单项选择题】Based on Exhibit 2, the amount that Hirji should allocate to the 2-year bond position is closest to:

A. C$331 million.

B. C$615 million.

C. C$1,492 million.

参考答案：C

【莽学解析】In order to take duration-neutral positions that will profit from an increase in the curvature of the yield curve, Hirji should structure a condor. This condor structure has the following positions: long the 2-year bonds, short the 5-year bonds, short the 10-year bonds, and long the long-term bonds. Hirji’s allocation to the 2-year bond position is calculated as follows:The C$150 million long-term bonds have a money duration of C$150×1,960=C$294,000 Allocation to 2-year bond=Money duration of long-term bonds/PVBP of 2-year bond 2-year bond position =C$294,000/197 = 1,492.39 or C$1,492 million

27.【单项选择题】Relative to the Canadian government bond index, the portfolio that Hirji proposes for the Malaysian client will most likely:

A. underperform.

B. remain stable.

C. outperform.

参考答案：C

【莽学解析】Hirji proposes an extreme bullet portfolio focusing on the middle of the yield curve. If the forecast is correct and the yield curve loses curvature, the rates at either end of the curve will rise or the intermediate yields will drop. As a result, bonds at the ends of the yield curve will lose value or the intermediate bonds will increase in value. In either case, the bullet portfolio will outperform relative to a more diverse maturity index portfolio like the benchmark.

28.【单项选择题】Based on Exhibit 3, the difference in the rolling yield between Hirji’s bullet portfolio and barbell portfolio is:

A. -8 basis points.

B. -6 basis points.

C. 2 basis points.

参考答案：B

【莽学解析】

The rolling yield of the two portfolios is calculated as follows:

Return Component	Formula	Bullet Portfolio	Barbell
Yield income	Annual coupon payment/Current bond price	1.86/100.00=1.86%	1.84/1 1.8
+Rolldown return	(Bond price$_{eh}$ − Bond price$_{bh}$)/Bond price$_{bh}$	(100.3 − 100.00)/100.00 =0.38%	(100 100.00) =0.
=Rolling yield	Yield income+Rolldown return	=2.24%	=2.

Difference in Rolling yield = Rolling yield of the bullet portfolio − Rolling yield of barbell portfolio

2.24% − 2.30%= − 0.06% or − 6 basis points

29.【单项选择题】Based on Exhibit 3, the total expected return of Hirji's barbell portfolio is closest to:

A. − 2.30%.

B. 0.07%.

C. 4.60%.

参考答案：C

【莽学解析】

【题干】Serena Soto is a risk management specialist with Liability Protection Advisors. Trey Hudgens, CFO of Kiest Manufacturing, enlists Soto's help with three projects. The first project is to defease some of Kiest's existing fixed-rate bonds that are maturing in each of the next three years. The bonds have no call or put provisions and pay interest annually. Exhibit 1 presents the payment schedule for the bonds.

The total expected return is calculated as follows:

Return Component	**Formula**	**Barbell Return(C)**	**Distractor A**	**Distractor B**
Yield income	Annual coupon payment/Current bond price	1.84/100.00 = 1.84%	1.84/100.00 =1.84%	1.84/100.00 =1.84%
+Rolldown return	(Bond $price_{eh}$–Bond $price_{bh}$)/Bond $price_{bh}$	(100.46–100.00)/100.00 = 0.46%	(100.46–100.00)/100.00 = 0.46%	(100.46–100.00)/100.00 =0.46%
=Rolling yield	Yield income+Rolldown return	=2.30%	=2.30%	=2.30%
+E(change in price based on yield view)	(–MD_{eh}×Δyield)+[½×Convexity×$(\Delta yield)^2$]	[–4.12×–0.55%]+[½×24.98×$(–0.55\%)^2$] =2.30%	[–4.12×–0.55%]+[½×24.98×(–0.55%)] =–4.60%	[4.12×–0.55%]+[½×24.98×$(–0.55\%)^2$] =–2.23%
=Total expected return		**=4.60%**	=–2.30%	=0.07%

The second project for Soto is to help Hudgens immunize a $20 million portfolio of liabilities. The liabilities range from 3.00 years to 8.50 years with a Macaulay duration of 5.34 years, cash flow yield of 3.25%, portfolio convexity of 33.05, and basis point value (BPV) of $10,505. Soto suggested employing a duration-matching strategy using one of the three AAA rated bond portfolios presented in Exhibit 2.

Exhibit 1. Kiest Manufacturing Bond Payment Schedule As of 1 October 2017

Maturity Date	Payment Amount
1 October 2018	$9,572,000
1 October 2019	$8,392,000
1 October 2020	$8,200,000

Exhibit 2. Possible AAA Rated Duration-Matching Portfolios

	Portfolio A	Portfolio B	Portfolio C
Bonds (term, coupon)	4.5 years, 2.63% 7.0 years, 3.50%	3.0 years, 2.00% 6.0 years, 3.25% 8.5 years, 3.88%	1.5 years, 1.25% 11.5 years, 4.38%
Macaulay duration	5.35	5.34	5.36
Cash flow yield	3.16%	3.33%	3.88%
Convexity	31.98	34.51	50.21
BPV	$10,524	$10,506	$10,516

Soto explains to Hudgens that the underlying duration-matching strategy is based on the following three assumptions.1. Yield curve shifts in the future will be parallel.2. Bond types and quality will closely match those of the liabilities.3. The portfolio will be rebalanced by buying or selling bonds rather than using derivatives.The third project for Soto is to make a significant direct investment in broadly diversified global bonds for Kiest's pension plan. Kiest has a young workforce, and thus, the plan has a long-term investment horizon. Hudgens needs Soto's help to select a benchmark index that is appropriate for Kiest's young workforce and avoids the "bums" problem. Soto discusses three benchmark candidates, presented in Exhibit 3.

With the benchmark selected, Hudgens provides guidelines to Soto directing her to (1) use the most cost-effective method to track the benchmark and (2) provide low tracking error.After providing Hudgens with advice on direct investment, Soto offered him additional information on alternative indirect investment strategies using (1) bond mutual funds, (2) exchange-traded funds (ETFs), and (3) total return swaps. Hudgens expresses interest in using bond mutual funds rather than the other strategies for the following reasons.

Reason 1 Total return swaps have much higher transaction costs and initial cash outlay than bond mutual funds.

Reason 2 Unlike bond mutual funds, bond ETFs can trade at discounts to their underlying

Exhibit 3. Global Bond Index Benchmark Candidates

Index Name	Effective Duration	Index Characteristics
Global Aggregate	7.73	Market cap weighted; Treasuries, corporates, agency, securitized debt
Global Aggregate GDP Weighted	7.71	Same as Global Aggregate, except GDP weighted
Global High Yield	4.18	GDP weighted; sovereign, agency, corporate debt

indexes, and those discounts can persist.
Reason 3 Bond mutual funds can be traded throughout the day at the net asset value of the underlying bonds.

30.【单项选择题】Based on Exhibit 1, Kiest's liabilities would be classified as:
A. Type I.
B. Type II.
C. Type III.
参考答案：A
【莽学解析】Type I liabilities have cash outlays with known amounts and timing. The dates and amounts of Kiest's liabilities are known; therefore, they would be classified as Type I liabilities.

31.【单项选择题】Based on Exhibit 2, the portfolio with the greatest structural risk is:
A. Portfolio A.
B. Portfolio B.
C. Portfolio C.
参考答案：C
【莽学解析】Structural risk arises from the design of the duration-matching portfolio. It is reduced by minimizing the dispersion of the bond positions, going from a barbell structure to more of a bullet portfolio that concentrates the component bonds' durations around the investment horizon. With bond maturities of 1.5 and 11.5 years, Portfolio C has a definite barbell structure compared with those of Portfolios A and B, and it is thus subject to a greater degree of risk from yield curve twists and non-parallel shifts. In addition, Portfolio C has the highest level of convexity, which increases a portfolio's structural risk.

32.【单项选择题】Which portfolio in Exhibit 2 fails to meet the requirements to achieve immunization for multiple liabilities?
A. Portfolio A
B. Portfolio B

C. Portfolio C

参考答案：A

【莽学解析】The two requirements to achieve immunization for multiple liabilities are for the money duration (or BPV) of the asset and liability to match and for the asset convexity to exceed the convexity of the liability. Although all three portfolios have similar BPVs, Portfolio A is the only portfolio to have a lower convexity than that of the liability portfolio (31.98, versus 33.05 for the $20 million liability portfolio), and thus, it fails to meet one of the two requirements needed for immunization.

33.【单项选择题】Based on Exhibit 2, relative to Portfolio C, Portfolio B:

A. has higher cash flow reinvestment risk.

B. is a more desirable portfolio for liquidity management.

C. provides less protection from yield curve shifts and twists.

参考答案：B

【莽学解析】Portfolio B is a laddered portfolio with maturities spread more or less evenly over the yield curve. A desirable aspect of a laddered portfolio is liquidity management. Because there is always a bond close to redemption, the soon-to-mature bond can provide emergency liquidity needs. Barbell portfolios, such as Portfolio C, have maturities only at the short-term and long-term ends and thus are much less desirable for liquidity management.

34.【单项选择题】Soto’s three assumptions regarding the duration-matching strategy indicate the presence of:

A. model risk.

B. spread risk.

C. counterparty credit risk.

参考答案：A

【莽学解析】Soto believes that any shift in the yield curve will be parallel. Model risk arises whenever assumptions are made about future events and approximations are used to measure key parameters. The risk is that those assumptions turn out to be wrong and the approximations are inaccurate. A non-parallel yield curve shift could occur, resulting in a mismatch of the duration of the immunizing portfolio versus the liability.

35.【单项选择题】The global bond benchmark in Exhibit 3 that is most appropriate for Kiest to use is the:

A. Global Aggregate Index.

B. Global High Yield Index.

C. Global Aggregate GDP Weighted Index

参考答案：C

【莽学解析】Kiest has a young workforce and thus a long-term investment horizon. The Global Aggregate and Global Aggregate GDP Weighted Indexes have the highest durations (7.73 and 7.71, respectively) and would be appropriate for this group. Hudgens also wants to avoid the “bums” problem, however, which arises as a result of a market-cap-weighted portfolio increasing the weight of a particular issuer or sector that has increasing borrowings. The Global Aggregate Index is a market-cap-weighted index. As a result, the Global Aggregate GDP Weighted Index is the most appropriate selection for Kiest.

36.【单项选择题】To meet both of Hudgens’s guidelines for the pension’s bond fund investment, Soto should recommend:

A. pure indexing.

B. enhanced indexing.

C. active management.

参考答案：B

【莽学解析】Low tracking error requires an indexing approach. A pure indexing approach for a broadly diversified bond index would be extremely costly because it requires purchasing all the constituent securities in the index. A more efficient and cost-effective way to track the index is an enhanced indexing strategy, whereby Soto would purchase fewer securities than the index but would match primary risk factors reflected in the index. Closely matching these risk factors could provide low tracking error.

37.【单项选择题】Which of Hudgens’s reasons for choosing bond mutual funds as an investment vehicle is correct?

A. Reason 1

B. Reason 2

C. Reason 3

参考答案：B

【莽学解析】Although a significant spread between the market price of the underlying fixed-income securities portfolio and an ETF’s NAV should drive an authorized participant to engage in arbitrage, many fixed-income securities are either thinly traded or not traded at all. This situation might allow such a divergence to persist.

【题干】Doug Kepler, the newly hired chief financial officer for the City of Radford, asks the deputy financial manager, Hui Ng, to prepare an analysis of the current investment portfolio and the city’s current and future obligations. The city has multiple liabilities of different amounts and maturities relating to the pension fund, infrastructure repairs, and various other obligations. Ng observes that the current fixed-income portfolio is structured to match the duration of each liability. Previously, this structure caused the city to access a line of credit for temporary mismatches resulting from changes in the term structure of interest rates. Kepler asks Ng for different strategies to manage the interest rate risk of the city’s fixed-income investment portfolio against one-time shifts in the yield curve. Ng considers two different strategies: Strategy 1: Immunization of the single liabilities using zero-coupon bonds held to maturity. Strategy 2: Immunization of the single liabilities using coupon-bearing bonds while continuously matching duration. The city also manages a separate, smaller bond portfolio for the Radford School District. During the next five years, the school district has obligations for school expansions and renovations. The funds needed for those obligations are invested in the Bloomberg Barclays US Aggregate Index. Kepler asks Ng which portfolio management strategy would be most efficient in mimicking this index. A Radford School Board member has stated that she prefers a bond portfolio structure that provides diversification over time, as well as liquidity. In addressing the board member’s inquiry, Ng examines a bullet portfolio, a barbell portfolio, and a laddered portfolio.

38.【单项选择题】A disadvantage of Strategy 1 is that:

A. price risk still exists.

B. interest rate volatility introduces risk to effective matching.
C. there may not be enough bonds available to match all liabilities.
参考答案：C
【莽学解析】It may be impossible to acquire zero-coupon bonds to precisely match liabilities because the city's liabilities have varying maturities and amounts. In many financial markets, zero-coupon bonds are unavailable.

39.【单项选择题】Which duration measure should be matched when implementing Strategy 2?
A. Key rate
B. Modified
C. Macaulay
参考答案：C
【莽学解析】An investor having an investment horizon equal to the bond's Macaulay duration is effectively protected, or immunized, from the first change in interest rates, because price and coupon reinvestment effects offset for either higher or lower rates.

40.【单项选择题】An upward shift in the yield curve on Strategy 2 will most likely result in the:
A. price effect cancelling the coupon reinvestment effect.
B. price effect being greater than the coupon reinvestment effect.
C. coupon reinvestment effect being greater than the price effect.
参考答案：A
【莽学解析】An upward shift in the yield curve reduces the bond's value but increases the reinvestment rate, with these two effects offsetting one another. The price effect and the coupon reinvestment effect cancel each other in the case of an upward shift in the yield curve for an immunized liability.

41.【单项选择题】The effects of a non-parallel shift in the yield curve on Strategy 2 can be reduced by:
A. minimizing the convexity of the bond portfolio.
B. maximizing the cash flow yield of the bond portfolio.
C. minimizing the difference between liability duration and bond-portfolio duration.
参考答案：A
【莽学解析】Minimizing the convexity of the bond portfolio minimizes the dispersion of the bond portfolio. A non-parallel shift in the yield curve may result in changes in the bond portfolio's cash flow yield. In summary, the characteristics of a bond portfolio structured to immunize a single liability are that it (1) has an initial market value that equals or exceeds the present value of the liability, (2) has a portfolio Macaulay duration that matches the liability's due date, and (3) minimizes the portfolio convexity statistic.

42.【单项选择题】Ng's response to Kepler's question about the most efficient portfolio management strategy should be:
A. full replication.
B. active management.
C. an enhanced indexing strategy.
参考答案：C

【莽学解析】Under an enhanced indexing strategy, the index is replicated with fewer than the full set of index constituents but still matches the original index’s primary risk factors. This strategy replicates the index performance under different market scenarios more efficiently than the full replication of a pure indexing approach.

43.【单项选择题】Which portfolio structure should Ng recommend that would satisfy the school board member’s preference?

A.Bullet portfolio

B.Barbell portfolio

C.Laddered portfolio

参考答案：C

【莽学解析】The laddered approach provides both diversification over time and liquidity. Diversification over time offers the investor a balanced position between two sources of interest rate risk: cash flow reinvestment and market price volatility. In practice, perhaps the most desirable aspect of a laddered portfolio is liquidity management, because as time passes, the portfolio will always contain a bond close to maturity.C is correct. The laddered approach provides both diversification over time and liquidity. Diversification over time offers the investor a balanced position between two sources of interest rate risk: cash flow reinvestment and market price volatility. In practice, perhaps the most desirable aspect of a laddered portfolio is liquidity management, because as time passes, the portfolio will always contain a bond close to maturity.

【题干】Celia Deveraux is chief investment officer for the Topanga Investors Fund, which invests in equities and fixed income. The clients in the fund are all taxable investors. The fixed-income allocation includes a domestic (US) bond portfolio and an externally managed global bond portfolio.The domestic bond portfolio has a total return mandate, which specifies a long-term return objective of 25 basis points (bps) over the benchmark index. Relative to the benchmark, small deviations in sector weightings are permitted, such risk factors as duration must closely match, and tracking error is expected to be less than 50 bps per year.The objectives for the domestic bond portfolio include the ability to fund future liabilities, protect interest income from short-term inflation, and minimize the correlation with the fund’s equity portfolio. The correlation between the fund’s domestic bond portfolio and equity portfolio is currently 0.14. Deveraux plans to reduce the fund’s equity allocation and increase the allocation to the domestic bond portfolio. She reviews two possible investment strategies.Strategy 1 Purchase AAA rated fixed-coupon corporate bonds with a modified duration of two years and a correlation coefficient with the equity portfolio of －0.15.Strategy 2 Purchase US government agency floating-coupon bonds with a modified duration of one month and a correlation coefficient with the equity portfolio of －0.10Deveraux realizes that the fund’s return may decrease if the equity allocation of the fund is reduced. Deveraux decides to liquidate $20 million of US Treasuries that are currently owned and to invest the proceeds in the US corporate bond sector. To fulfill this strategy, Deveraux asks Dan Foster, a newly hired analyst for the fund, to recommend Treasuries to sell and corporate bonds to purchase.Foster recommends Treasuries from the existing portfolio that he believes are overvalued and will generate capital gains. Deveraux asks Foster why he chose only overvalued bonds with capital gains and did not include any bonds with capital losses. Foster responds with two statements.Statement 1 Taxable investors should prioritize selling overvalued bonds

and always sell them before selling bonds that are viewed as fairly valued or undervalued. Statement 2 Taxable investors should never intentionally realize capital losses. Regarding the purchase of corporate bonds, Foster collects relevant data, which are presented in Exhibit 1

Exhibit 1. Selected Data on Three US Corporate Bonds

Bond Characteristics	Bond 1	Bond 2	Bond 3
Credit quality	AA	AA	A
Issue size ($ millions)	100	75	75
Maturity (years)	5	7	7
Total issuance outstanding ($ millions)	1,000	1,500	1,000
Months since issuance	New issue	3	6

Deveraux and Foster review the total expected 12-month return (assuming no reinvestment income) for the global bond portfolio. Selected financial data are presented in Exhibit 2.

Exhibit 2. Selected Data on Global Bond Portfolio

Notional principal of portfolio (in millions)	€200
Average bond coupon payment (per €100 par value)	€2.25
Coupon frequency	Annual
Current average bond price	€98.45
Expected average bond price in one year (assuming an unchanged yield curve)	€98.62
Average bond convexity	22
Average bond modified duration	5.19
Expected average yield and yield spread change	0.15%
Expected credit losses	0.13%
Expected currency gains (€ appreciation vs. $)	0.65%

Deveraux contemplates adding a new manager to the global bond portfolio. She reviews three proposals and determines that each manager uses the same index as its benchmark but pursues a different total return approach, as presented in Exhibit 3.

Exhibit 3. New Manager Proposals Fixed-Income Portfolio Characteristics

Sector Weights (%)	Manager A	Manager B	Manager C	Index
Government	53.5	52.5	47.8	54.1
Agency/quasi-agency	16.2	16.4	13.4	16.0
Corporate	20.0	22.2	25.1	19.8
MBS	10.3	8.9	13.7	10.1

Risk and Return Characteristics	Manager A	Manager B	Manager C	Index
Average maturity (years)	7.63	7.84	8.55	7.56
Modified duration (years)	5.23	5.25	6.16	5.22
Average yield (%)	1.98	2.08	2.12	1.99
Turnover (%)	207	220	290	205

44.【单项选择题】Which approach to its total return mandate is the fund's domestic bond portfolio most likely to use?

A. Pure indexing

B. Enhanced indexing

C. Active management

参考答案：B

【莽学解析】The domestic bond portfolio's return objective is to modestly outperform the benchmark. Its risk factors, such as duration, are to closely match the benchmark. Small deviations in sector weights are allowed, and tracking error should be less than 50 bps year. These features are typical of enhanced indexing.

45.【单项选择题】Strategy 2 is most likely preferred to Strategy 1 for meeting the objective of:

A. protecting inflation.

B. funding future liabilities.

C. minimizing the correlation of the fund's domestic bond portfolio and equity portfolio.

参考答案：A

【莽学解析】Floating-coupon bonds provide inflation protection for the interest income because the reference rate should adjust for inflation. The purchase of fixed-coupon bonds as outlined in Strategy 1 provides no protection against inflation for either interest or principal. Strategy 1 would instead be superior to Strategy 2 in funding future liabilities (better predictability as to the amount of cash flows) and reducing the correlation between the fund's

domestic bond portfolio and equity portfolio (better diversification).

46.【单项选择题】Are Foster's statements to Deveraux supporting Foster's choice of bonds to sell correct?

A. Only Statement 1 is correct.

B. Only Statement 2 is correct.

C. Neither Statement 1 nor Statement 2 is correct.

参考答案：C

【莽学解析】Since the fund's clients are taxable investors, there is value in harvesting tax losses. These losses can be used to offset capital gains within the fund that will otherwise be distributed to the clients and cause them higher tax payments, which decreases the total value of the investment to clients. The fund has to consider the overall value of the investment to its clients, including taxes, which may result in the sale of bonds that are not viewed as overvalued. Tax-exempt investors' decisions are driven by their investment views without regard to offsetting gains and losses for tax purposes.

47.【单项选择题】Based on Exhibit 1, which bond most likely has the highest liquidity premium?

A. Bond 1

B. Bond 2

C. Bond 3

参考答案：C

【莽学解析】Bond 3 is most likely to be the least liquid of the three bonds presented in Exhibit 2 and will thus most likely require the highest liquidity premium. Low credit ratings, longer time since issuance, smaller issuance size, smaller issuance outstanding, and longer time to maturity typically are associated with a lower liquidity (and thus a higher liquidity premium). Bond 3 has the lowest credit quality and the longest time since issuance of the three bonds. Bond 3 also has a smaller issue size and longer time to maturity than Bond 1. The total issuance outstanding for Bond 3 is smaller than that of Bond 2 and equal to that of Bond 1.

48.【单项选择题】Based on Exhibit 2, the total expected return of the fund's global bond portfolio is closest to:

A. 0.90%.

B. 2.20%.

C. 3.76%.

参考答案：B

【莽学解析】

49.【单项选择题】Based on Exhibit 3, which manager is most likely to have an active management total return mandate?

A. Manager A

B. Manager B

C. Manager C

参考答案：C

【莽学解析】The sector weights, risk and return characteristics, and turnover for Manager C

Return Component	Formula
Yield income	Annual coupon payment/Current bond price
+ Rolldown return	$\frac{Bond\ price_{End-of-horizonperiod} - Bond\ price_{begining-of-horizon\ period}}{Bond\ price_{begining-of-horizon\ period}}$
= Rolling yield	Yield income + Rolldown return
+*E*(Change in price based on investor's yield and yield spread view)	$[-MD \times \Delta Yield] + [{}^{1}/_{2} \times Convexity \times (Yield)^2]$
− *E*(Credit losses)	Given
+*E*(Currency gains or losses)	Given
=Total expected return	

differ significantly from those of the index, which is typical of an active management mandate. In particular, Manager C's modified duration of 6.16 represents a much larger deviation from the benchmark index modified duration of 5.22 than that of the other managers, which is a characteristic unique to an active management mandate.

【题干】Amy McLaughlin is a fixed-income portfolio manager at UK-based Delphi Investments. One year ago, given her expectations of a stable yield curve over the coming 12 months and noting that the yield curve was upward sloping, McLaughlin elected to position her portfolio solely in 20-year US Treasury bonds with a coupon rate of 4% and a price of 101.7593, with the expectation of selling the bonds in one year at a price of 109.0629. McLaughlin expected the US dollar to depreciate relative to the British pound by 1.50% during the year. McLaughlin chose the 20-year Treasury bonds because they were on the steepest part of the yield curve.McLaughlin

and Michaela Donaldson, a junior analyst at Delphi, are now discussing how to reposition the portfolio in light of McLaughlin's expectations about interest rates over the next 12 months. She expects interest rate volatility to be high and the yield curve to experience an increase in the 2s/10s/30s butterfly spread, with the 30-year yield remaining unchanged. Selected yields on the Treasury yield curve, and McLaughlin's expected changes in yields over the next 12 months, are presented in Exhibit 1.

Exhibit 1. Current Treasury Yield Curve and Forecasted Yields

Maturity(years)	Starting Yield(Current)	Forecasted Change in Yield	Ending Yield
2	1.01%	+0.04%	1.05%
5	1.55%	+0.40%	1.95%
10	2.75%	+0.50%	3.25%
30	3.50%	+0.00%	3.50%

Based on these interest rate expectations, McLaughlin asks Donaldson to recommend a portfolio strategy. Donaldson considers the following three options.Bullet portfolio: Invest solely in 10-year Treasury government bondsBarbell portfolio: Invest solely in 2-year and 30-year Treasury government bondsLaddered portfolio: Invest equally in 2-year, 5-year, 10-year, and 30-year Treasury government bondsAfter recommending a portfolio strategy, McLaughlin tells Donaldson that using a duration-neutral, long/short structure may be a better strategy for attempting to enhance portfolio return. McLaughlin suggests that Donaldson consider a butterfly trade or a condor trade using some combination of 2-year, 5-year, 10-year, and 30-year bonds.Donaldson suggests they also consider altering the portfolio's convexity to enhance expected return given McLaughlin's interest rate expectations. Donaldson tells McLaughlin the following.

Statement 1 Portfolios with larger convexities often have higher yields.

Statement 2 If yields rise, a portfolio of a given duration with higher convexity will experience less of a price decrease than a similar-duration, lower-convexity portfolio.

50.【单项选择题】The portfolio strategy implemented by McLaughlin last year is mostly likely to be described as:

A.a carry trade.

B.a barbell structure.

C.riding the yield curve.

参考答案：C

【莽学解析】Last year, McLaughlin expected the yield curve to be stable over the year. Riding the yield curve is a strategy based on the premise that, as a bond ages, it will decline in yield if the yield curve is upward sloping. This is known as "roll down"; that is, the bond rolls down the (static) curve. Riding the yield curve differs from buy and hold in that the manager is expecting to add to returns by selling the security at a lower yield at the horizon. This strategy may be particularly effective if the portfolio manager targets portions of the

yield curve that are relatively steep and where price appreciation resulting from the bond' ration to maturity can be significant. McLaughlin elected to position her portfolio solely in 20-year Treasury bonds, which reflect the steepest part of the yield curve, with the expectation of selling the bonds in one year.

51.【单项选择题】At the start of last year, the expected return on the portfolio strategy implemented by McLaughlin was closest to:

A. 9.61%.

B. 9.68%.

C. 12.61%.

参考答案：A

【莽学解析】

In this case, the E(Change in price based on investor' views of yields and yield spreads) term is equal to zero because McLaughlin expects the yield curve to remain stable.

52.【单项选择题】Using the yield curve forecast shown in Exhibit 1, which portfolio strategy should Donaldson recommend for the year ahead?

A. The bullet portfolio

B. The barbell portfolio

C. The laddered portfolio

参考答案：B

【莽学解析】McLaughlin expects the yield curve to experience an increase in the butterfly spread, with the 30-year yield remaining unchanged, which implies that the yield curve will increase its curvature, pinned at the 30-year yield, as shown in Exhibit 1. The barbell portfolio, consisting of 2-year and 30-year bonds, would be expected to perform best. Although the two-year rate is expected to increase, the effective duration of two-year bonds is quite small, resulting in minimal price impact. Similarly, the 30-year yield is expected to remain constant, resulting in minimal price impact as well. Relative to the barbell portfolio, the laddered portfolio has greater exposure to the expected increases in the 5-year and 10-year yields, and the bullet portfolio has greater exposure to the expected increase in the 10-year yield. Therefore, the barbell portfolio would be expected to perform best given McLaughlin's interest rate expectations.

53.【单项选择题】Given McLaughlin's interest rate expectations over the next 12 months, which long/short structure would be most appropriate?

A. Condor: short wings, long body

B. Butterfly: short barbell, long bullet

C. Butterfly: long barbell, short bullet

参考答案：C

【莽学解析】McLaughlin expects interest rate volatility to be high and the yield curve to experience an increase in the butterfly spread, with the 30-year yield remaining unchanged. Given these expectations, a long barbell (2s and 30s, short bullet [10s] butterfly trade would be most appropriate. The two-year yield is expected to slightly increase by 0.04%, resulting in minimal price impact given the relatively low duration of two-year bonds. Similarly, the 30-

$E(R)$	≈	Yield income	(equal to rate/Curren
	+	Rolldown return	[equal to Begin bon price]
	+	E(Change in price based on investor's views of yields and yield spreads)	
	–	E(Credit losses)	
	+	E(Currency gains or losses)	

Return Component	Formula*	Portfolio E
Yield income	Annual coupon payment/Current bond price	4/101.7593
+ Rolldown return	$\frac{(Bond\ price_{End\ of\ horizon} - Bond\ price_{begining\ of\ horizon})}{Bond\ price_{begining\ of\ horizon}}$	(109.062 101.7593)/
+ E(Change in price based on investor's views of yields and yield spreads)		0%
= Rolling yield	Yield income + Rolldown return	3.93% +7.
− E(Credit losses)	N/A	− 0%
+E(Currency gains or losses)	Given	− 1.50%
=Total expected return		= 9.61%

year yield is expected to remain constant, resulting in minimal price impact as well. The 10-year yield (0.50%) is expected to increase by more than the 5-year yield (0.40%), and with its higher effective duration, the 10-year would be appropriate for the short bullet part of the butterfly trade.

54.【单项选择题】Given McLaughlin's interest rate expectations over the next 12 months, one way that Donaldson and McLaughlin could alter convexity to enhance expected return would be to:
A. sell call options on bonds held in the portfolio.

B. buy call options on long-maturity government bond futures.

C. sell put options on bonds they would be willing to own in the portfolio.

参考答案：B

【莽学解析】McLaughlin expects interest rate volatility to be high and the yield curve to experience an increase in the butterfly spread, with the 30-year yield remaining unchanged. To increase the portfolio's expected return, Donaldson and McLaughlin should buy call options on long-maturity government bond futures to increase convexity.

55.【单项选择题】Which of Donaldson's statements is correct?

A. Only Statement 1

B. Only Statement 2

C. Only Statement 3

参考答案：B

【莽学解析】Statement 2 is correct: If yields rise, a portfolio of a given duration with higher convexity will experience less of a price decrease than a similar-duration, lower-convexity portfolio. Statement 1 is incorrect, as portfolios with larger convexities often have lower yields. Investors will be willing to pay for increased convexity when they expect yields to change by more than enough to cover the sacrifice in yield.