

2027 CFA® Exam Prep

IFT Mock Exams

Level III

Mock Exam 1: Session 2

PORTFOLIO MANAGEMENT PATHWAY

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Errata information can be found at <https://goo.gl/UVXdAv>

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Exam 1 Session 2

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Start time: 2:00 PM

End time: 4:12 PM

QUESTION 1**TOPIC: PORTFOLIO MANAGEMENT****THE TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS**

Alan Dunphy is a fixed income manager with Blue Jay Advisors. He meets with a potential client, Carl Jacobsen, who is the Chief Risk Officer of a life insurance firm, ADI. Jacobsen requires fixed income portfolio management to meet ADI's two types of obligations: short term obligations of expected claims and long term future obligations. ADI is interested in passive exposure to fixed-income instruments for its bond portfolio. Blue Jay offers two strategies for passive investment.

Strategy 1: To minimize tracking risk by fully replicating a range of benchmarks comprised of 1–3-year government bonds.

Strategy 2: To match primary risk factors through an enhanced indexing strategy for a subset of the bonds included in the S&P U.S. Treasury Bond 10+ Year Index. The strategy can also be customized according to the client's sustainability preferences.

Dunphy informs the client that for investors seeking exposure to an index, Blue Jay offers a 1 – 3 Year Government Bond Index linked ETF.

A client – the DVI Pension Fund of Blue Jay - wants a fixed income portfolio to immunize a single 12-year liability. Dunphy suggests two portfolios of government bonds that pay semi-annual coupons but have the same market value. The risk and return characteristics of the two portfolios are given in Exhibit 1.

Exhibit 1

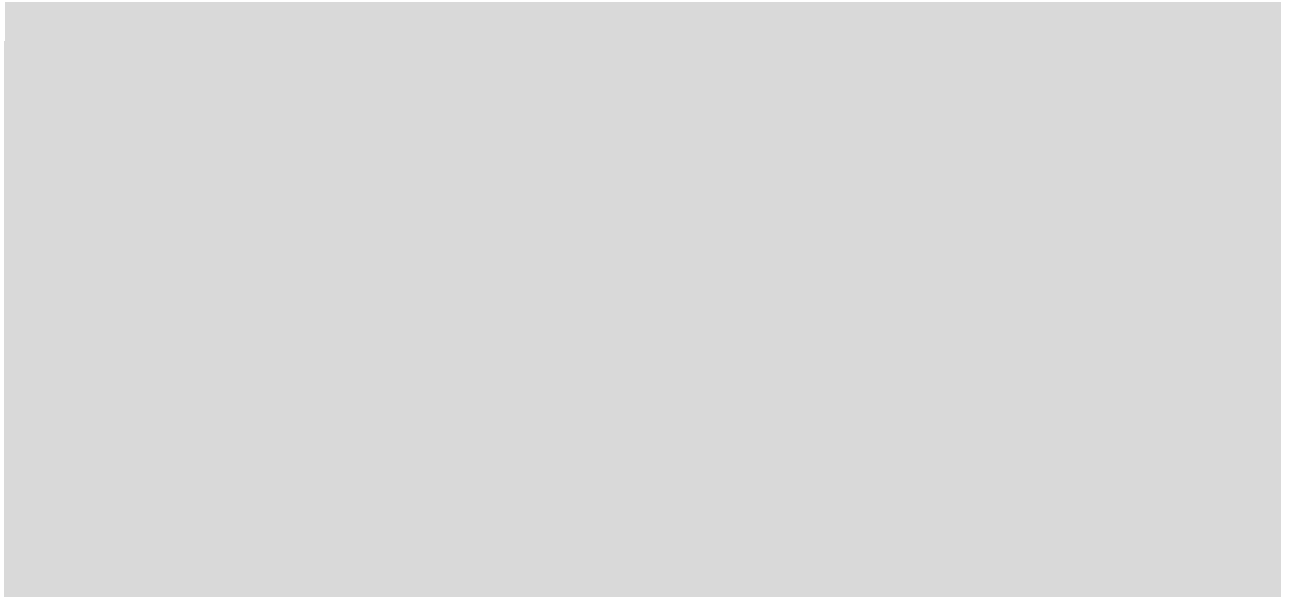
	Portfolio I	Portfolio II
Cash flow yield annualized	8.55%	8.56%
Macaulay duration annualized	11.95	12.01
Convexity annualized	170	200

These statistics are based on aggregating the interest and principal cash flows for the bonds that constitute the portfolios. Dunphy explains to the client that once they choose the portfolio, they will need to rebalance it over time to maintain its target duration.

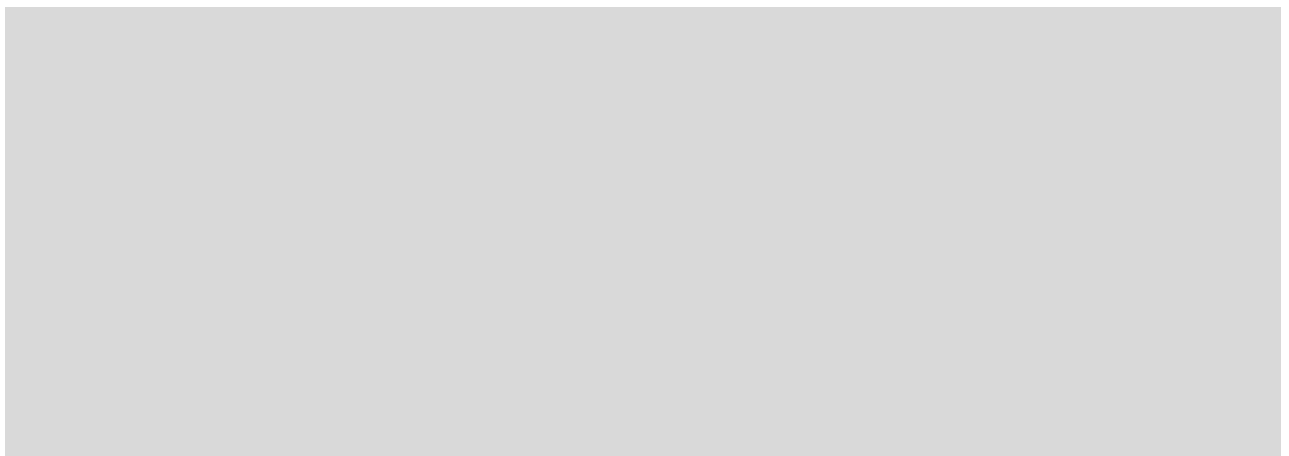
Durham Corporation asks Dunphy to build and manage a portfolio of fixed-income bonds to retire multiple corporate debt liabilities. The debt liabilities have a market value of USD 60,550,110, a modified duration of 7.10, and a BPV of USD 42,991. Dunphy buys a portfolio of government bonds with a market value of USD 73,370,000, a modified duration of 3.15, and a BPV of USD 23,112. The initial surplus of USD 12,819,890 and the negative duration gap of USD 19,879 are deliberate. Dunphy decides to pursue a contingent immunization strategy to retire the debt at a lower cost than the duration matching approach. The futures contract he buys is based on a 10-year T-note with a

par value of USD 100,000. It is estimated to have a BPV of USD 108.1514 per contract. He purchases 220 contracts.

1.1 Describe two advantages of a 1-3 Year Government Bond Index linked ETF for ADI and one disadvantage for the following Strategy 1.



1.2. Describe how using Strategy 2 for ADI's long term liabilities addresses its sustainability preferences.



- 1.3 Select** the *most* appropriate Portfolio (Portfolio I, Portfolio II) for Dunphy's client if his objective is to minimize variance in the realized rate of return over the 12-year horizon. **Justify** your response.

- 1.4 Calculate** the number of contracts (N_f) to hedge the debt liabilities fully. **Determine** whether Dunphy is over-hedging or under-hedging the risk exposure based on the view that 10-year yields will decline. **Justify** your response.

QUESTION 2**TOPIC: PORTFOLIO CONSTRUCTION****THE TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS**

Theo Radcliff works as an investment adviser for institutional investors at JD Warren, an investment management company. He meets with the CFO of Network Solutions (NS), Karen Santiago, to discuss the company's DB pension plan investments. NS is solely responsible for funding its Defined Benefit (DB) plan by making annual contributions. Santiago asks Radcliff to compare NS's DB plan with its two main competitors, Tyler Technologies (TT) and Munis Support (MS). Radcliff collects the following financial data and pension plan characteristics for the three companies.

	NS	TT	MS
Sales	21,000,000	38,000,000	29,500,000
Profit margin	29%	35%	35%
Projected benefit obligations	23,500,000	34,000,000	27,600,000
Long term debt-to-capital ratio	47%	43%	53%
Provision allowing lump-sum distribution	YES	YES	NO
Provision allowing early retirement	NO	YES	NO
Proportion of active lives as a percent of total participants	43%	28%	64%
Plan funded status	Deficit	Surplus	Surplus

Radcliff also has an endowment among his clientele associated with the University of Brussels (UB).

- The endowment currently has a planned time horizon until 2037.
- The endowment's investment returns are tax-exempt.
- UB currently receives enough funds from the endowment to meet its spending needs, and in recent years, it has had a budget surplus.
- UB's board is confident that it could raise funds through donor contributions, if necessary.

JD Warren manages a large fund for Hassler Insurance Corp (HIC), a non-life insurance company.

- The timing and amount of claims are uncertain, but HIC has a policy of settling all its liabilities within 3 years.
- The return requirement for HIC is calculated every year based on its forecast for expected claims, capital market expectations, and the market value of its portfolios.

David Ernst, president of JD Warren, asks Radcliff to review the IPSs of both the endowment and HIC.

Radcliff is approached by Safeway International (SI), a US-based company that operates a DB pension plan for its employees. SI is profitable, with a sound balance sheet and lower debt ratios than its peers. Its DB pension plan is in surplus. The company's percentage ratio of active employees to retired employees is 75%/25%. The average age of its employees is 39 years, and the workforce is stable. SI's management aims to maintain the plan's funded status (pension surplus) relative to plan liabilities and would like to cease contributions to the plan in the next 2 years. However, after 2 years, it will make the necessary contributions if needed.

The plan maintains an asset allocation of 30% in US equities, 10% in emerging market equities, and 60% in US fixed income. The fixed-income allocations consist of 40% in US Treasury bonds and 20% in cash and short-term Treasury bills. However, the expected returns of both equities and fixed income are below long-term averages. As a result, SI's management is considering investing in alternatives. After reviewing the expected returns of various asset classes, Radcliff recommends the following asset allocation to SI.

Exhibit 1

Asset Class	Recommended Asset Allocation	Expected Long-Term (10-Year) Annual Return
Cash and US T-bills	5%	0.5%
US equities	20%	5.0%
Emerging market equities	5%	6.0%
US Treasury Bonds	30%	3.0%
Private Debt	20%	7.0%
Hedge Funds	20%	9.0%

2.1 Determine which company's pension plan has the highest risk tolerance based on:

- i. Financial status/profitability.
- ii. Plan features.

Justify each response with one reason.

2.2 Compare each of the following components of HIC's IPS and UB Endowment's IPS:

- i. Risk tolerance.
- ii. Liquidity requirement.

Justify each response with two reasons.

2.3 Determine the investment horizon (short-term or long-term)/risk tolerance and the liquidity needs (high, low) of the DB plan. **Justify** each response.

- Investment horizon– short term, long term
- Risk Tolerance – higher, lower
- Liquidity needs – high, low

2.4 Determine the *most likely* effect (increase, decrease, no change) on the SI DB pension plan's funded status because of the recommended asset allocation. **Justify** your response with two reasons.

- Increase
- Decrease
- No change

QUESTION 3**TOPIC: ECONOMICS****THE TOTAL POINT VALUE OF THIS QUESTION SET IS 12 POINTS**

Tony Roth, senior analyst at Wellington Asset Management, and his team are preparing capital market expectations for the following year. Roth employs quantitative models that incorporate exchange rates, interest rates, commodity prices, and/or policy variables. These models use estimated past data to forecast the future with consistency. Mike Winston, a junior analyst on Roth's team, relies on leading indicators because they provide quick information about upcoming changes in economic activity, inflation, interest rates, and security prices.

Using his approach and Winston's analysis, Roth determines the current phase of a country's business cycle.

Exhibit 1
Predictions of Business Cycle Phase

	Country Y (Developed market)	Country T (Emerging market)
Cycle Phase	Slowdown	Early expansion

Roth has to analyze the effects of inflation on different asset classes, the path of nominal interest rates, and each country's potential monetary response in the current phase. He also considers the timing of each economy's entry into the next business cycle. After assessing Country Y, Roth makes the following notes:

- Monetary policy has been tight for Country Y, while fiscal policies have been loose. Expected inflation is within range.
- The current yield curve for Country Y is flat. Inflation is rising. Money market rates are procyclical, adjusting in response to expected inflation, reflecting economic slowdown conditions.

Roth observes Country T's government policies and finds that it is not expected to increase transfer payments or introduce a more progressive tax regime.

3.1 Identify two strengths of each forecasting approach that have likely appealed to each analyst.

- Econometric modeling approach
- Leading economic indicator–LEI approach