

**ESSAY 1 of 7** • Reading 1.2

ID: 1152

An institutional investor believes that environmental, social, and governance (ESG) issues meet broad objectives of society and affect the performance of investment portfolios. Accordingly, the investor has committed to the Principles for Responsible Investment and is using the "Technical Guide for Limited Partners: Responsible Investing in Private Equity" to develop an approach to responsible investment with respect to its private equity investment strategy.

**QUESTION A** • Learning Objective 1.2.1

State two Principles for Responsible Investment, and describe actions that private equity fund limited partners and general partners may take to apply these two Principles to private equity.

**QUESTION B** • Learning Objective 1.2.1

Discuss whether top-quartile general partners of private equity funds are less likely to select fund investors who enquire about the general partners' ESG principles and practices.

**QUESTION C** • Learning Objective 1.2.1

At the initial stages of the ESG due diligence process of a private equity fund, the institutional investor reviews the fund's marketing materials and offering memorandum, and identifies that the fund mandate includes ESG considerations. The investor then reviews the private equity fund's public Transparency Report, located on the PRI website. In the more detailed due diligence process, what does the PRI recommend that the investor use as a starting point for assessment and as a tool to establish dialogue with the private equity fund manager?

**QUESTION D** • Learning Objective 1.2.3

Briefly describe considerations for the ESG due diligence process when investing in private equity using a fund of fund and using private equity secondaries.

**QUESTION E** • Learning Objective 1.2.1

The general partner (GP) of a private equity fund plans to create value for a new portfolio company via responsible investing. The GP has identified a couple of new, sustainable product lines for the company and is encouraging the company to be more efficient in its use of resources such as energy. Other than these approaches, give examples of how else the company can create value by: i) increasing its revenue and ii) reducing costs and liabilities. Give two examples for each approach.

**ESSAY 2 of 7** • Reading 1.8

ID: 1057

Mateo Fernandez is recently-hired strategy consultant for the Distributed Ledger Technology Program at Damon Banking Group, a large U.S. financial institution headquartered in Chicago. Fernandez is charged with developing a strategy and architectural framework for distributed ledger technology at Damon. At his first meeting with several department heads, he makes an introductory presentation on distributed ledger technology and its application in the financial services industry.

**QUESTION A** • Learning Objective 1.8.1

Briefly describe a distributed ledger (**1.5pts**), and indicate two ways in which it improves on a traditional database (**1pt**).

**QUESTION B** • Learning Objective 1.8.1

Describe two regulatory challenges associated with implementing distributed ledger technology.

**QUESTION C** • Learning Objective 1.8.1

Distributed ledger technology can provide considerable efficiency gains in the form of automated transactions and fraud control in different types of businesses. State two key characteristics of distributed ledger technology that can enable these gains.

**QUESTION D** • Learning Objective 1.8.1

State two key benefits of distributed ledger technology for the financial services industry, as discussed in Lewis, McPartland, and Ranjan's "Blockchain and Financial Market Innovation" article.

**QUESTION E** • Learning Objective 1.8.1

Discuss the challenges of liquidity, security, and immutability associated with using distributed ledger technology for the financial services industry.

**QUESTION F** • Learning Objective 1.8.1

Distributed ledger technology applied in the financial services industry will most likely use private networks that have what other type of characteristic?

**ESSAY 3 of 7** • Reading 1.1

ID: 1163

A portfolio has a market value of \$4 million. The portfolio's investment policy statement specifies a floor value of \$3.4 million and a multiplier of 5. The portfolio manager intends to implement a constant proportion portfolio insurance (CPPI) strategy.

**QUESTION A** • Learning Objective Learning Objective L2

What dollar amount would initially be invested in stocks according to the CPPI strategy?

**QUESTION B** • Learning Objective Learning Objective L2

If the equity market drops 10%, what would be the value of the portfolio assets and what action should the portfolio manager take according to the CPPI strategy?

**QUESTION C** • Learning Objective Learning Objective L2

How would your answer differ if the equity market dropped 20% instead?

**QUESTION D** • Learning Objective Learning Objective L2

What percentage drop in the equity market would result in the floor being breached?

**QUESTION E** • Learning Objective Learning Objective L2

If the risk-free rate is 3%, what would be the value of the floor after 6 months?

**QUESTION F** • Learning Objective Learning Objective L2

Suppose, in 6 months, the equity market decreases 15%. Assuming that the risk-free rate is 3%, market volatility is 20%, and the payoff of the time-t CPPI strategy is given by the formula below, calculate the payoff of the CPPI strategy at that time.

$$A = F + (A_0 - F_0) \left( \frac{S}{S_0} \right)^m e^{(1-m)(r+0.5m\sigma^2)t}$$

**QUESTION G** • Learning Objective Learning Objective L2

Briefly describe the payoff and exposure diagrams of the CPPI strategy.

**ESSAY 4 of 7** • Reading 1.8

ID: 1059

Distributed ledger technology is currently a popular topic. In the financial services industry, distributed ledgers have the potential to create efficiencies for operations and transactions, accelerating banking processes such as clearing and settlement, and to improve data security and reduce counterparty risk.

In February 2019, JP Morgan announced its own digital coin, called "JPM Coin," which will be issued on the bank's own private blockchain, called Quorum, and will be redeemable 1:1 for U.S. dollars. JP Morgan plans to use JPM Coin to settle payments between large institutions.

**QUESTION A** • Learning Objective 1.8.1

Briefly describe what happens when a new transaction is added to a distributed ledger network. Include in your response the implication of the immutability of the ledger.

**QUESTION B** • Learning Objective 1.8.1

Is the blockchain technology that underlies the digital currency Bitcoin based on a private, public, permissionless, and/or permissioned network?

**QUESTION C** • Learning Objective 1.8.1

State the name of the consensus mechanism used by the bitcoin blockchain and briefly describe it.

**QUESTION D** • Learning Objective 1.8.1

- i. What key benefit of blockchain systems do permissioned blockchains lack?
- ii. State one key benefit of permissionless blockchains that permissioned blockchains share.
- iii. State a problem associated with permissionless blockchains that permissioned blockchains alleviate.

**ESSAY 5 of 7** • Reading 1.3

ID: 1153

As discussed in Monk and Clark's paper: "Asset Owners, Investment Management, and Commitment: An Organizational Framework," recent developments in the industry have witnessed asset owners claiming control over the investment process by insourcing the production of returns and/or selective intermediation. The control of the production process and oversight over the commitment of those employed to realize the institutions' objectives are problematic due to three asymmetries in the investment services market.

**QUESTION A** • Learning Objective 1.3.1

- i. Other than asymmetry of information, what are the asymmetries in the investment management process that favor the sell side of the financial market? Briefly describe one of the asymmetries you state.
- ii. Which of the asymmetries is the most important for asset owners?

**QUESTION B** • Learning Objective 1.3.3

Describe how a large financial organization with internal capabilities and management resources consistent with a wide scope of activities likely decides to insource and/or pursue selective re-intermediation.

**QUESTION C** • Learning Objective 1.3.3

Briefly describe the mismatch that often exists between the interests of asset owners and external asset managers in terms of their temporal reach and geographical dimension.

**QUESTION D** • Learning Objective 1.3.5

State two of the performance and commitment metrics that can be used to manage relationships between institutions' senior managers and investment staff.

**QUESTION E** • Learning Objective 1.3.1

State and briefly describe the first tier in Clark and Monk's three-tiered functional model of investment management that reflects recent initiatives by asset owners to better realize their goals and objectives.

**QUESTION F** • Learning Objective 1.3.1

State the second tier in Clark and Monk's three-tiered investment management model, and state a factor that is considered a key ingredient in the process of generating risk-adjusted rates of return.

**ESSAY 6 of 7** • Reading 1.1

ID: 1164

You are the chief investment officer of The Fincal Fund and regularly review your portfolio to determine if a change in strategy is warranted or a change in position is necessary based on fluctuations in the equity market. Your decisions are based in part on market forecasts made by your research team. You currently have a buy-and-hold strategy implemented, where the mix of your portfolio is \$1 million in stocks and \$240,000 in risk-free assets.

**QUESTION A** • Learning Objective Learning Objective L2

Under this strategy, what should the value of your portfolio assets be if the stock market increases by 7%?

**QUESTION B** • Learning Objective Learning Objective L2

In what type of market would it be most beneficial for you to continue implementing this strategy, given that your risk tolerance level remains the same?

**QUESTION C** • Learning Objective Learning Objective L2

Your research team informs you that projections indicate that equity prices are expected to oscillate fairly significantly, but end fairly close to their beginning levels. Based on this information, you switch to a different trading strategy that performs better in this type of environment. At the time you switch, the value of your portfolio is \$1.4 million. After a short time, the market drops by 4.3%.

- i) State which strategy you switched to.
- ii) Calculate the value of your portfolio assets after the drop in the market.
- iii) Describe how you rebalance after the market drop.

**QUESTION D** • Learning Objective Learning Objective L2

You ask your research team to provide you with a report comparing and contrasting the payoff curves of the buy-and-hold strategy and the one you selected for the flat market. Describe components of the report that you would expect to receive from them.

**ESSAY 7 of 7** • Reading 1.4

ID: 1156

JPP, a large sovereign wealth fund, is planning to make a fairly large allocation to illiquid private assets. While JPP does not have any scheduled payment obligations, it may face significant cash demands from its sovereign sponsor or unexpected GP capital calls.

Despite the enhanced returns and improved diversification of illiquid private assets, JPP is aware that its portfolio liquidity will decline and thus affect its ability to meet unexpected liquidity demands. Therefore, JPP's management team considers implementing the cash flow-driven asset allocation framework proposed by Shen et al in the paper "Building a Better

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**Portfolio: Balancing Performance and Liquidity."**

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**QUESTION A** • Learning Objective 1.4.1

JPP's management team recognizes its challenge is to structure its portfolio so that it maximizes expected performance, at the same time as keeping the frequency and severity of liquidity events under control. Therefore, it must determine how to formulate a private asset commitment strategy to manage private asset exposure and its uncertain cash flows.

What two other issues/questions must JPP address?

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**QUESTION B** • Learning Objective 1.4.2

- i. If JPP is focused on vintage diversification and implements the target NAV commitment strategy, what portion of uncommitted capital should be selected to use for the commitment amount in the next period: 0.85, 1, or 1.25?
  - ii. If JPP implements a cash flow matching (CFM) commitment strategy, how does it determine the amount committed at the start of each quarter?
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**QUESTION C** • Learning Objective 1.4.2

Which commitment strategy would JPP adopt if:

- i. Liquidity is a major concern?
  - ii. It wants a smooth commitment pattern?
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**QUESTION D** • Learning Objective 1.4.2

Should JPP use the cash flow matching commitment strategy if it were starting a private capital investment program with no prior commitments?

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**QUESTION E** • Learning Objective 1.4.3

What types of assets are used to meet GP capital calls? Give an example of each asset type that you state.

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**QUESTION F** • Learning Objective 1.4.1

To which of these liquidity events would JPP give the highest severity score: rebalancing liquidity shortage or capital call liquidity shortage?

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**QUESTION G** • Learning Objective 1.4.1

JPP's management team is concerned about keeping a large amount of its committed, uncalled capital in low-risk public investments due to the likely drag on its portfolio returns. If JPP uses the Takahashi-Alexander cash flow to predict capital calls, what will the capital call amount be in the next period?

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