# Case Study in PM : Institutional

CFA三级培训项目

讲师:

101% Contribution Breeds Professionalism

# Topic in CFA Level III

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# Reading 28

## Case Study in Portfolio Management : Institutional

# Framework

## Institutional

- Managing Liquidity Risk
  - Liquidity Profiling and Time-to-Cash Tables
  - Rebalancing and Commitments
  - Stress Testing
  - Derivatives
- Earning an Illiquidity Premium
- QUINCO Case
  - QUINCO Investment Strategy
  - Strategic Asset Allocation
  - Liquidity Management
  - Asset Manager Selection
  - Tactical Asset Allocation
  - Asset Allocation Rebalancing

# 1. Managing Liquidity Risk

- Liquidity risk refers to a portfolio having to dispose of illiquid securities **at a deep discount** during troubled markets.
- **Four key methods** to manage liquidity risk include
  1. liquidity profiling and time-to-cash tables,
  2. rebalancing and commitment strategies,
  3. stress testing analyses,
  4. derivatives.

# 1.1 Liquidity Profiling and Time-to-Cash Tables

- **For an endowment**, the potential cash inflows and outflows must be determined.
  - Cash outflows include distributions to the university and meeting capital call requirements for illiquid investments.
    - ✓ For example, real assets, private equity, hedge funds, and structured products).
  - Cash inflows would typically include donations and investment income earned from the portfolio.
- **The next step** is to establish a timeline that involves constructing a liquidity classification schedule (time-to-cash table).
- That schedule would **have three distinct components:**
  1. amount of time needed to convert assets to cash (**Time to Cash**),
  2. liquidity classification level (**Liquidity Classification**),
  3. **liquidity budget**.

# 1.1 Liquidity Profiling and Time-to-Cash Tables

- **Time-to-Cash Table and Liquidity Budget.**

| Time to Cash | Liquidity Classification | Liquidity Budget (% of portfolio) |
|---|---|---|
| < 1 week | Highly liquid | At least 10% |
| < 1 quarter | Liquid | At least 35% |
| < 1 year | Semi-liquid | At least 50% |
| > 1 year | Illiquid | Up to 50% |

# 1.1 Liquidity Profiling and Time-to-Cash Tables

- **The liquidity classification** is closely linked to the amount of time it takes to liquidate an investment without having a major impact on markets.
  - The latter would be demonstrated by a minimal differential in the expected market price immediately before and after a sell transaction.
  - In addition, an investment that takes over one year to exit would likely be considered illiquid.
- **The time to cash** may include a full range of periods beyond those illustrated in the aforementioned Time-to-Cash table, depending on whether they correspond to the investor's cash outflows.
- **The liquidity budget** will then provide minimum or maximum percentage allocations for the different time periods.

# 1.1 Liquidity Profiling and Time-to-Cash Tables

- To develop the liquidity budget, there must be preliminary work performed in observing the liquidity traits of the investments over a reasonable time period.
  - Within a specific asset class, the various investments could have very diverse liquidity characteristics.
    - ✓ For example, exchange-traded funds (ETFs) may be more liquid than commingled funds.
  - ✓ Additionally, the same type of investment (e.g., commingled fund) may offer different levels of liquidity; one may offer semiannual liquidity because it is focused on small-cap foreign stocks, while the other may offer monthly liquidity because it is focused on large-cap foreign stocks.
  - ✓ That is why it is important to analyze the investments in greater detail.

# 1.1 Liquidity Profiling and Time-to-Cash Tables

- An excerpt of **a liquidity profiling for a portfolio**

| Asset Class | Asset Class Allocation (% of portfolio) | Investment Allocation (% of overall portfolio) | Investment Vehicle | Liquidity Classification | | | |
|---|---|---|---|---|---|---|---|
| | | | | Highly Liquid | Liquid | Semi-Liquid | Illiquid |
| Fixed income | 14% | 5% | Separate account | 100% | 0% | 0% | 0% |
| | | 8% | Commingled fund | 100% | 0% | 0% | 0% |
| | | 1% | Futures | 100% | 0% | 0% | 0% |
| Domestic equity | 17% | 8% | Commingled fund | 0% | 50% | 50% | 0% |
| | | 8% | Separate account | 0% | 100% | 0% | 0% |
| | | 1% | Futures | 100% | 0% | 0% | 0% |

# 1.2 Rebalancing and Commitments

- In addition to managing liquidity, it is necessary to maintain the overall risk profile within a desired (quantitative) range because over time and during times of market stress, asset values will change — sometimes very dramatically — thus greatly altering the desired balances in each asset class.
- It is important to have sufficient liquid assets and rebalancing mechanisms in place. Rebalancing mechanisms include the following.
  - **Systematic rebalancing policies**. Rebalancing disciplines, such as calendar rebalancing and percent-range rebalancing, are intended to control risk relative to the strategic asset allocation.
  - **Automatic adjustment mechanisms.** These are mechanisms designed to maintain a stable risk profile when exposure drifts from targeted exposure.

# 1.2 Rebalancing and Commitments

- **Multi-year funding strategies for private markets** that incorporate a steady pace of commitments to reach a target allocation and/or to keep the allocation close to target over time are other means to ensure the portfolio remains consistent with desired risk objectives.
  - Investing in private market funds makes it more difficult for the portfolio to keep a stable or specific allocation level in the long term because within a given fund, the timing and frequency of when the committed capital is drawn and the return of capital distributions are beyond the control of the investor.
  - By investing in multiple funds, however, the timing and frequency becomes more stable.
- **The objective of a multi-year funding strategy** is to design a commitment-pacing strategy that will result in the desired portfolio exposure to the asset class over time.
- Additionally, **the use of scenario analysis** can take the analysis further to account for various market conditions. Over time, the level of annual commitments will need to be adjusted as needed.

# 1.3 Stress Testing

- Stress testing explicitly considers how the liquidity needs of a portfolio will change during a period of market stress. The idea is to conduct analysis to assume "worst case" or very extreme market conditions and the impact on both assets and liabilities at the same time.
- The stress tests can be based on any combination of the following: **history, statistical models, and scenario analysis**.

# 1.4 Derivatives

- **Derivatives** require far less cash than investing in underlying assets, which makes derivatives an ideal method for rebalancing.
  - ✓ In addition, a futures overlay allows for rebalancing of many (but not all) asset classes without altering any of the asset allocations determined by the external active managers.
- With leverage, taking a long futures position requires only minimal cash requirements for margin.

# 2. Earning an Illiquidity Premium

- It is often the case that relatively illiquid investments such as private equity and real estate will earn an additional return (over the market return) for taking on the risk of holding up capital for an unknown amount of time. This is known as the illiquidity (or liquidity) premium earned.
  - ✓ Studies have shown that the illiquidity premium increases with the amount of time (think of an upward—sloping yield curve, for example).
- A different way to model the illiquidity premium is to think of it **as the value of a put option** where the strike price is the marketable price (a theoretically estimated price, as if it were freely traded) of the illiquid asset when it was purchased.
  - ✓ That leads to the computation of the price of the illiquid asset as follows:

illiquid asset price = marketable asset price - put price

# 2. Earning an Illiquidity Premium

- Using the marketable and the illiquid prices, we can derive the expected returns for both, and the difference in expected returns would be the illiquidity premium in percentage terms as follows:

illiquidity premium (%) = expected return on illiquid asset (%) - expected return on marketable asset (%)

- There are a substantial number of studies to support **the positive correlation** between illiquidity and expected returns for publicly traded stocks.

# Example

- A portfolio analyst makes the following two statements:

  **Statement 1:** The illiquidity premium is relatively easy to determine accurately.

  **Statement 2:** Calendar and percent-range rebalancing are examples of automatic adjustment mechanisms.

  How many of the analyst's statements are correct?

  A. Zero.

  B. One.

  C. Two.

# Example

- **Answer: A**

  **Statement 1** is incorrect. In practice, the illiquidity premium is challenging to accurately determine given all the other factors that interact in determining equity returns. In addition, broad market indexes are used to estimate illiquidity premiums, even though the typical investor is not likely to have such a breadth of investment exposure.

  **Statement 2** is incorrect. Calendar and percent-range rebalancing are examples of systematic rebalancing policies.

# Example

- **Describe** how futures and options can be used for leverage and liquidity purposes.

- **Answer:**

  Taking a long futures position requires only minimal cash requirements for margin, which is a form of a leveraged investment. Therefore, any cash not required for margin can be used to invest in other assets with differing levels of liquidity, or to meet other liquidity requirements.

  Options can be purchased at premiums that are often only a fraction of the cost of the underlying asset, thereby serving as a form of leverage. Or, options can be sold to earn premium income that helps to generate liquidity.

# 3. QUINCO Case

- The Quadrivium University (QU) endowment was set up many years ago with the purpose of offering financial assistance to undergraduate students. The current value of the endowment is $8 billion, and about 75% of that amount has unrestricted use, with the other 25% being subject to donor-specified use restrictions.
- QU's annual operating budget is $583 million, and 70% of that amount covers the remuneration of faculty and administrative staff. In addition, the budget is to cover debt payments, maintenance costs, and provide funds related to research and financial aid. The endowment makes annual distributions to fund about 60% of QU's operating budget, and the dollar amounts have been increasing for each of the past five years. Greater stability in the distributions has been requested by the board of the university, so in that regard, the spending rule was changed after the financial crisis over 10 years ago.

# 3. QUINCO Case

- Pre-crisis, a simple spending rule existed based on 5% of the market value of the endowment at the beginning of the year.
- Post-crise, the spending rule incorporates geometric smoothing (the Yale formula) and is expressed as follows:

Spending for current fiscal year = (66% × spending for previous fiscal year) + 34% × (5% × endowment market value at the end of the previous fiscal year)

- To compute the QU endowment's spending for the current year, the previous year's spending was $358.1 million and the endowment's market value at the end of the previous fiscal year was $7,002.3 million.

Spending for current fiscal year = (66% × $358.1 million) + 34% × (5% × $7,002.13 million) = $355.4 million

# 3. QUINCO Case

- The QU endowment's investment objective is to earn a sufficient return over the long term to cover the annual spending and to maintain the real value of the endowment.
- At an annual 5% spending rate, 2% - 3% annual inflation applicable to universities, and annual donations of 1%, the endowment has an annual nominal return requirement of 8% - 9%. The risk objective is between a 12% and 14% annual standard deviation of portfolio returns.
- A board of trustees ("the Trustees") oversees the activities of QU. The Quadrivium University Investment Company (QUINCO) is the university investment office and is responsible for managing the QU endowment.
- Aaron Winter is the president of QUINCO, and he reports to the university president and to the QUINCO board of directors ("the Board"). The Board consists of 11 members appointed by the Trustees, and the Board deals with approving investment policy and guidelines. QUINCO staff are charged with implementing the investment policy.

# 3. QUINCO Case

- QUINCO's 13 investment professionals are officially employed by QU. QUINCO's investment model involves implementation of investment strategy by external managers instead of having in-house investment management.
- Instead, internal staff deal with asset allocation, risk management, manager selection, and continuation decisions regarding the external managers.
- Assets are invested in (1) fixed income, (2) public equity, (3) private equity, (4) real assets (composed of primarily private real estate and natural resources), and (5) diversifying strategies (primarily hedge fund strategies targeting high absolute returns with low correlations to traditional asset classes like public equity and fixed income).
- The last three categories comprise alternative investments. Each of the five categories is managed by a senior portfolio manager and an analyst.

# 3. QUINCO Case

- In addition, the team includes a portfolio strategist in charge of asset allocation and risk management, also supported by an analyst, and the president of the office who acts as the chief investment officer (CIO).
- The portfolio strategist has ongoing duties involving rebalancing, overlays, and tactical asset allocation (TAA) tilts. Any decisions made by external investment managers and TAA deviations require the approval of the internal investment committee. Winter leads that committee, which includes all senior portfolio managers and the portfolio strategist.
- Finally, the Board must provide final approval for the hiring of any external managers.

# 3.1 QUINCO Investment Strategy

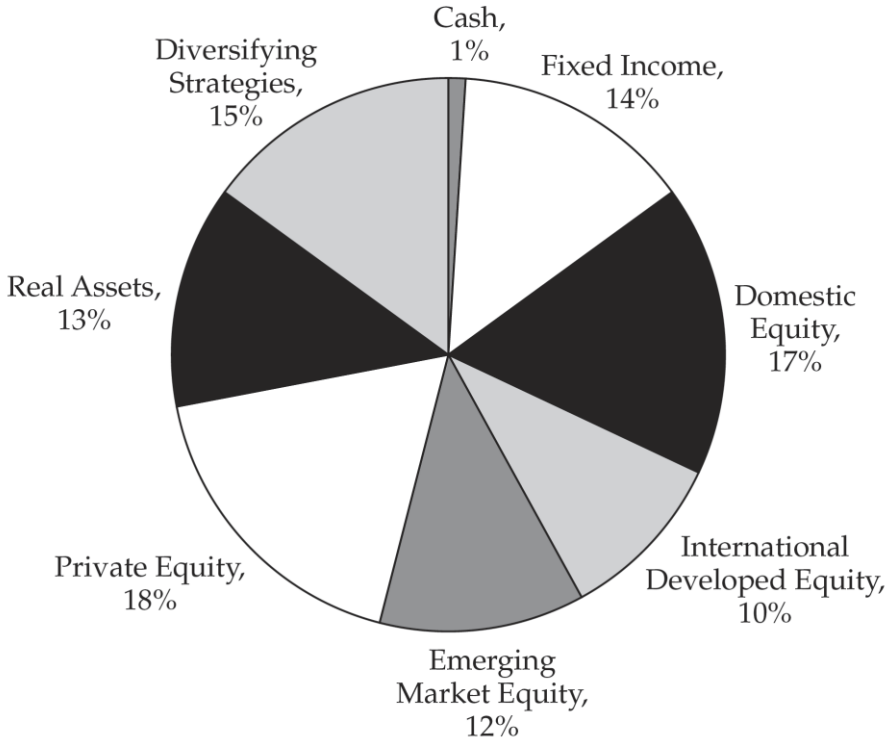
- QUINCO's investment strategy is concerned primarily with the long term. Its connections with QU alumni networks in the industry has allowed the endowment to benefit from the knowledge of the best-in-class managers.
- Initially, its investment universe was confined to traditional publicly traded stocks and bonds. With growth of the endowment, the long-term strategy began to include alternative investments, which may allow for greater diversification and higher risk-adjusted returns (in particular, private equity and real assets).
- Alternative investments have helped to boost the endowment's returns over the past 20 years, although QU's allocation to alternative investments is still below average compared to other comparable endowments.

# 3.1 QUINCO Investment Strategy

- Spanning an over 20-year period from 1996 to 2017, the QU endowment asset allocation has changed as follows:
  - Cash allocation has remained constant at 1%.
  - Traditional stocks (domestic) and bonds initially accounted for almost 70% of assets but have been reduced to about 30%.
  - International equity (developed markets) initially accounted for almost 25% of assets but have been reduced to 10%.
  - Emerging market equity initially accounted for 0% and has increased to 10% - 15%.
  - Private equity initially accounted for less than 5% and has increased to 15% - 20%.
  - Real assets initially accounted for less than 5% and have increased to 10% - 15%.
  - Diversifying strategies initially accounted for 0% and have increased to 10% - 15%.

# 3.1 QUINCO Investment Strategy

- During the most recent **strategic asset allocation (SAA)** review by the QUINCO Board two years ago, they resolved to increase the allocation to alternative investments and decrease the allocation to developed market equities (domestic and international).
- **Current Strategic Asset Allocation**



# 3.1 QUINCO Investment Strategy

- Winter has worked at QUINCO for five years and became the president and CIO one year ago. He will be performing his first asset allocation review. Winter has a portfolio strategy team to assist him with the review. The team includes Julia Thompson, the team lead, as well as her asset allocation analysis plus the senior portfolio managers for fixed income and public equities. After consulting with the Board, Winter advises the team to deal with the following matters pertaining to the review:
  - An optimal liquidity profile and liquidity management plan for the endowment.
  - The SAA in context of the investment outlook; there is an expectation of lower future returns in most traditional asset classes.
  - The use of TAA as a complement to SAA to improve risk-adjusted returns.
  - The QU endowment's underperformance compared to its peers.

# 3.2 Strategic Asset Allocation

- The strategy team have finished the work requested and will be making a presentation to the Board.
- As part of their economic analysis, they used unsmoothing methods for private equity (a relatively illiquid asset class) due to the smoother reported returns resulting from the lack of frequency of pricing data.
- The unsmoothing methods resulted in an upward adjustment to the reported volatility of private equity.

# 3.2 Strategic Asset Allocation

- Long-Term Expected Return (Net of Fees) and Volatility Assumptions

| Asset Class | Expected Real Return (annual geometric mean, next 10 years) | Expected Nominal Return (annual geometric mean, next 10 years) | Standard Deviation of Returns (annual) | Sharpe Ratio |
|---|---|---|---|---|
| Cash | 0.9% | 3.4% | 1.7% | |
| Fixed income | 1.8% | 4.3% | 6.3% | 0.14 |
| Domestic equity | 5.0% | 7.6% | 18.1% | 0.23 |
| International developed equity | 4.8% | 7.4% | 19.7% | 0.20 |
| Emerging market equity | 6.0% | 8.7% | 26.6% | 0.19 |
| Private equity | 8.5% | 11.2% | 24.0% | 0.32 |
| Real assets | 4.5% | 7.1% | 13.3% | 0.27 |
| Diversifying strategies | 4.0% | 6.6% | 10.0% | 0.31 |

# 3.2 Strategic Asset Allocation

- With some research, it was determined that **the primary reasons** for the QU endowment's underperformance relative to its peers was the lower amount of risk taken and the lower allocation to illiquid investments, especially private equity.
- Therefore, the current and proposed allocations are as follows:

| | Current | Proposed |
|---|---|---|
| Cash | 1% | 1% |
| Fixed income | 14% | 9% |
| Domestic equity | 17% | 15% |
| International developed equity | 10% | 9% |
| Emerging market equity | 12% | 12% |
| Private equity | **18%** | **23%** |
| Real assets | **13%** | **16%** |
| Diversifying strategies | 15% | 15% |

Note: Inflation assumed to be 2.5% p.a.

# 3.2 Strategic Asset Allocation

## ➢ Proposed vs. Current SAA: Expected Risk/Return Properties

| Portfolio Characteristic | Current SAA | Proposed SAA |
|---|---|---|
| Expected nominal return (annual average, geometric, next 10 years) | 7.5% | 7.8% |
| Expected real return (annual average, geometric, next 10 years) | 5.0% | 5.3% |
| Standard deviation of returns (annual) | 12.5% | 13.2% |
| Sharpe ratio | 0.33 | 0.34 |
| Probability of 25% erosion in purchasing power over 20 years with 5% spending rate | 35% | 30% |

Note: The probability of erosion in purchasing power was derived based on a Monte Carlo simulation with a 20-year investment horizon, assuming expected return and volatility characteristics will be the same as for the next 10 years.

- There is also some reporting of Monte Carlo simulation results to bring attention to the potential erosion in purchasing power. The Board is willing to accept an annualized standard deviation of returns between 12% and 14%.

# 3.2 Strategic Asset Allocation

- Thompson is aware the proposed asset allocation implies **a small increase** in the overall risk profile of the endowment as measured by the volatility of portfolio returns (13.2% for the proposed SAA versus 12.5% for the current portfolio). She believes that the increase in risk is justified by:
  - Lower future returns expected for all asset classes will necessitate taking on more risk to maintain the same level of returns.
  - QU's endowment takes on less risk than its peers.
  - The estimated Sharpe ratio for fixed-income investments (less risky) means that there should not be as much allocation to less risky assets.
  - Monte Carlo simulations have indicated that in the long term, the proposed asset allocation has a better chance of earning the desired real return and preserving purchasing power.

# 3.3 Liquidity Management

- Given the increasing complexity in the investment portfolio and the university's reliance on regular distributions from the endowment, QUINCO needs a robust framework for managing liquidity.
- As part of their management duties, Thompson's team performs cash flow modeling over several time horizons and under normal and stressed market conditions. Thompson is worried that liquidity may deteriorate significantly during stressed market conditions for the following reasons.
  - **Capital calls** in private markets exceeding capital distributions.
  - **Activation of gates**.
  - **The smoothing effect**.

# 3.3 Liquidity Management

- Accordingly, Thompson's team has prepared a summary of liquidity profiles as follows:
  - Existing portfolio liquidity profile
    - ✓ **Normal conditions:** highly liquid (19%), liquid (26%), semi-liquid (22%),illiquid (33%)
    - ✓ **Stress conditions:** highly liquid (15%), liquid (26%), semi-liquid (20%), illiquid (39%)
  - Proposed portfolio liquidity profile:
    - ✓ **Normal conditions:** highly liquid (14%), liquid (24%), semi-liquid (23%),illiquid (39%)
    - ✓ **Stress conditions:** highly liquid (11%), liquid (25%), semi-liquid (21%), illiquid (43%)

# Example

- **Discuss** three reasons why the QU endowment should increase its allocation to illiquid investments.

- **Answer:**

1. The QU endowment has a long-term investment focus, which increases its ability to invest in illiquid investments. Therefore, the addition of such assets to the QU endowment's investment opportunities may allow the efficient frontier to be shifted upward so that it achieves a higher return for a stated level of risk.

# Example

- **Answer:**

2. The QU endowment has consistently earned positive returns with its illiquid (alternative) investments over the past 20 years. After such a long time period, the illiquid investments portion of the portfolio is clearly established and diversified. With a team of industry experts at their disposal, including best-in-class managers, the endowment should expect to continue earning strong returns in the future, which justifies increasing the allocation to illiquid investments.
3. Compared to its peers, the QU endowment is underinvested in illiquid investments. Therefore, an increased allocation is justified to overcome its past underperformance compared to its peers.

# Example

- **Discuss** one concern with increasing the allocation to illiquid assets and describe how that concern can be mitigated.

- **Answer:**

  The increased allocation to illiquid assets (especially private equity and real assets) introduces more unsystematic risk. Therefore, placing smaller amounts in a larger number of investments will reduce much of that unsystematic risk.

# Example

- Using the information in the aforementioned table, **discuss** two reasons that support Thompson's proposed asset allocation.

- **Answer:**

  The proposed asset allocation has a better risk-return relationship than the existing SAA, as illustrated in the aforementioned table by the increase in Sharpe ratio from 0.33 to 0.34.

  The proposed asset allocation has a higher chance of earning the target return in the long term. Using the Monte Carlo simulation results, there is a 70% probability of having at least 75% of the purchasing power for the next 20 years; the result in the aforementioned table explicitly states 30% probability of a 25% erosion. Under the existing SAA, there is only a 65% probability of having at least 75% of the purchasing power.

# Example

- **Discuss** two tradeoffs involved with implementing the proposed asset allocation.

- **Answer:**

  One tradeoff of the proposed asset allocation is the increase in portfolio volatility — annual standard deviation rises 0.7% to 13.2%. However, given the expectation of lower returns for all asset classes, greater risk must be taken to earn the same level of returns.

  Another tradeoff is the transaction costs, since private equity and real assets are most likely to have higher investment management and performance fees than traditional public stock and bond investments. However, the return amounts in the aforementioned table, are on a net-of-fees basis, so they account for the increased fees.

# Example

- **State** two items that Thompson should confirm before implementing the proposed asset allocation.

- **Answer:**

  She should confirm that the metrics in the aforementioned table such as the standard deviation of returns (increased from 12.5% to 13.2%) and the 30% probability of ta 25% erosion in purchasing power are acceptable within the endowment's risk appetite.

  She should confirm that after increasing the illiquid assets allocation, the new asset allocation continues to meet all the portfolio liquidity requirements.

# Example

- **Discuss** how a current spending policy could impact liquidity needs when market conditions deteriorate.

- **Answer:**

  Spending policies have a built-in countercyclical impact, so spending rates end up being less than 5% during stronger market conditions and more than 5% during weaker market conditions. As a result, the endowment's liquidity needs are amplified during stressed market conditions.

# Example

- **Discuss** three tools for QUINCO to use for liquidity management — specifically, (1) cash flow forecasting and commitment pacing models, (2) liquidity budgets, and (3) stress tests.

- **Answer:**

  Cash flow forecasting and commitment pacing. models can be used to estimate the increased allocation to private equity and real assets. For example, cash outflows need to be estimated for future commitments in private equity; capital calls are legal obligations. Also, during market downturns, such cash outflows may become more onerous as inflows from prior investments could be curtailed or completely stopped due to a lack of cash as investments may not be liquidated due to low valuations. Liquidity budgets can be created after accounting for the endowment's cash inflows and outflows.

# Example

- **Answer:**

  Stress tests can be performed using both historical information and hypothetical assumptions within the framework of sensitivity analysis to determine how much variance in liquidity may occur and still be within the liquidity budget constraints.

# Example

- **Describe** the impact on QU's liquidity resulting from the proposed asset allocation.

- **Answer:**

  There will be a noticeable increase in more illiquid investments and a noticeable decrease in highly liquid investments. For example, in normal conditions, highly liquid assets will decrease by 5% (from 19% to 14%) and illiquid assets will increase by 6% (from 33% to 39%). In stressed conditions, highly liquid assets will decrease by 4% (from 15% to 11%) and illiquid assets will increase by 4% (from 39% to 43%). QU's overall liquidity profile will become more illiquid due to the increased investment in private equity and real assets, both of which are the most illiquid asset classes.

# Example

- **Describe** any follow-up actions Thompson needs to take with respect to the proposed asset allocation.

- **Answer:**

  Thompson must be certain that the endowment will be able to meet all its liquidity needs (e.g., distributions and rebalancing) for the proposed allocation and do so in stressed market conditions. Monitoring at key times when there is increased risk of not being able to meet its liquidity needs, as well as regular stress tests, would be suitable follow-up items to perform.

# 3.4 Asset Manager Selection

- Three months later, the process of hiring more external managers to implement the proposed asset allocation changes has begun. A request for proposal (RFP) for a private equity manager was issued, and one of the responses came from Genex Venture Capital (GVC) with a proposal to invest in its venture capital fund called "GVC Fund II." GVC is owned and operated by Virginia Hall, CFA, who is on the QU endowment board and has been a **long-time and highly supportive donor** to the university.
- Therefore, both the university treasurer and president are strongly in support of GVC's proposal and have indicated so to Winter. Winter, on the other hand, believes that **Hall asked the two individuals in advance to support her proposal**. Through the process of elimination, the two finalists are GVC and another venture capital fund that is a direct competitor of GVC, called Beacher Venture Investments (Beacher).

# 3.4 Asset Manager Selection

- GVC and Beacher are requested to present to QUINCO's investment committee. Jason Allen, **a former colleague of Winter**, is GVC's managing director, and he gives the GVC presentation.
- However, Winter knows that the presentation **contains confidential information that is not publicly available**, which was possibly obtained from the university treasurer.
- In addition, GVC's historical returns are presented with amounts materially greater than those reported elsewhere by third parties. Beacher is the more established pick of the two firms, **despite some problems with the performance of its previous fund**. But some concerns were raised about GVC's short existence to date.
- Ultimately, Bud Davis, one of QUINCO's senior portfolio managers in private equity, is asked to make a recommendation on which firm to go with.

# 3.4 Asset Manager Selection

- Davis states that GVC is finding it difficult to raise the targeted $300 million for Fund II since Fund I only raised $100 million. Investors are worried about the threefold expansion and the uncertainty whether GVC can achieve its goal.
- However, Davis **tempers that point with strong, positive comments** about GVC's manager and GVC's investment approach.
- In addition, Davis confirms that GVC's investment management fee will be lowered. Based on Davis's comments, the investment committee agrees with Davis's recommendation to go with GVC.
- Afterward, Winter speaks with Allen to convey the news. During the conversation, Allen states that Davis's spouse, Andrea, is Hall's daughter. When Winter confronted Davis with that knowledge, Davis **simply** stated that it was well known and **assumed** that everyone on the investment committee **already** knew of the relationship.

# Example

- **Discuss** ethical issues and potential violations of the Code and Standards by **Winter, Hall**, the QU president and QU treasurer, **Allen**, and **Davis**. (Note: The citation of specific standard numbers and names is not necessary.)

- **Answer:**

  Aaron Winter, QUINCO CIO

  - Standard VI(A): **Disclosure of Conflicts**. Winter should have disclosed to the Board that the owner of GVC is already very closely associated with the university.

# Example

- **Answer:**
- Aaron Winter, QUINCO CIO
  - Standard I(B): **Independence and Objectivity**. Winter is under pressure from some members of the university to award the position to GVC, which would impact his independence and objectivity. Winter should have disclosed that GVC's managing director is a former colleague as that it could potentially impair Winter's independence and objectivity.
  - Standard lll(E): **Preservation of Confidentiality**. Winter suspected that GVC used confidential information in its presentation, and he should have disclosed his concerns to the university.

# Example

➢ **Answer:**

Aaron Winter, QUINCO CIO

- Standard I(C): **Misrepresentation** and Standard III(D): **Performance Presentation**. Winter is suspicious as to the precision of the historical results provided.
- Standard V(A): **Diligence and Reasonable Basis**. Winter did not confirm or dispel his suspicions by doing any subsequent research or probing with GVC.

# Example

➢ **Answer:**

Virginia Hall, QU trustee, owner of GVC

- Standard VI(A): **Disclosure of Conflicts**. If Hall is trying to influence the hiring decision in favor of her company, then there is a conflict of interest. Hall's position as a QU trustee and her ownership of GVC is also a conflict as GVC is one of the finalists. to be considered for hiring as an external portfolio manager for the QU endowment.
- Standard IV(A): **Loyalty**. By potentially putting her own business interests ahead of the best interests of the university (she is a QU trustee), Hall would be in violation of her duty of loyalty.
- Standard III(E): **Preservation of Confidentiality**. Hall may have obtained confidential information and used it in GVC's presentation to improve GVC's chances of being hired.

# Example

➢ **Answer:**

QU president and QU treasurer (both are members of the QU Board)

- Standard IV(A): **Loyalty**. Both the president and treasurer must act in the university's best interests by hiring only the best portfolio manager. They are violating Standard IV(A) by pressuring Winter to hire GVC given Hall's close association with the university.
- Standard III(E): **Preservation of Confidentiality**. They may also be in violation of Standard III(E) if they were the culprits who provided the confidential information in the GVC presentation.
- Standard VI(A): **Disclosure of Conflicts** and Standard I(B): **Independence and Objectivity**. For example, they should have disclosed their bias toward Hall given her past generosity to the university. Furthermore, they should have abstained from any voting decisions on the external manager given their lack of independence and objectivity.

# Example

➢ **Answer:**

Jason Allen, GVC's managing director

- Standard I(C): **Misrepresentation** and Standard III(D): **Performance Presentation**. Allen may have used incorrect information, unknowingly or knowingly, in his presentation.

Bud Davis, QUINCO senior portfolio manager

- Standard VI(A): **Disclosure of Conflicts** and Standard I(B): **Independence and Objectivity**. Davis needs to make an objective evaluation of GVC in context of a hiring decision. The fact that his spouse is the daughter of GVC's owner presents a serious impairment to his independence and objectivity, and he should have disclosed the relationship.

# 3.5 Tactical Asset Allocation

- The Board has approved a much larger active risk budget for QUINCO's proposed TAA plan. The annual tracking error limit was specifically increased from 100 bps to 250 bps to try to increase overall portfolio returns. Winter and his staff are completely responsible for implementing the new TAA plan, and they have the authority to use 150 bps of the 250 bps budget to do so.
- Additionally, because the use of derivatives in the implementation would result in increased leverage, the Board approved a maximum leverage position of 5% of the portfolio value.
- Winter thinks that the TAA plan will allow for overweight and underweight positions in acceptable asset classes and allow for investing in assets beyond the policy portfolio benchmark universe that are still consistent with the investment policy. In implementing the plan, Winter began with fair value and mean reversion by creating fair value models for the portfolio assets. Relevant economic and financial data known to have predictive power were gathered and used to estimate future risk and return for periods ranging from one to three years.

# 3.5 Tactical Asset Allocation

- The output from the models (i.e., theoretically correct fair value) is then compared to actual prices to assess whether any variances are significant enough to be exploited, after considering the costs involved in doing so. Subsequent and thorough backtesting revealed that the models worked well.
- Specifically, large-cap U.S. equities were priced far below their fair value and mean reversion would occur in about a year. Thompson uses that information and proposes to overweight U.S. equities by 1% using either a total return swap, equity futures, or ETFs. The objective is to minimize use of cash and transaction costs.

# 3.5 Tactical Asset Allocation

- Cost Comparison Assuming a Fully-Funded Mandate

| Cost Component | ETF | Futures | Total Return Swap |
|---|---|---|---|
| Commission (round trip) | 4.00 | 2.00 | 5.00 |
| Management fee (annual) | 9.50 | 0.00 | 0.00 |
| Bid/offer spread (round trip) | 2.50 | 2.00 | 6.00 |
| Price impact (round trip) | 15.00 | 10.00 | 0.00 |
| Mispricing (tracking error, annual) | 4.00 | 8.00 | 0.00 |
| Cost to roll the futures contract | 0.00 | 20.00 | 0.00 |
| Funding cost | 0.00 | 0.00 | 40.00 |
| **Total cost** | **35.00** | **42.00** | **51.00** |

Notes: The exhibit shows the team's cost comparison for the three implementation options — ETFs, futures, and total return swaps——for an $80 million notional exposure to the S&P 500 Index (assuming a fully funded mandate) over a one-year investment horizon. All numbers are in basis points (bps) unless otherwise indicated.

# 3.5 Tactical Asset Allocation

- Thompson feels that ETFs require too much up-front cash (100% of the value) or that the 50% permitted margin would provide only limited leverage opportunities ($80 million investment with $40 million provided in cash and $40 million borrowed). She realizes that using futures and total return swaps to obtain $80 million exposure would require far less cash than the $40 million required if using ETFs.
- On the other hand, **ETFs and futures** are more liquid - they are widely traded and have low transaction costs. Both instruments allow for early termination, should market conditions warrant it, and Thompson has made it known that the flexibility is important to her. **Total return swaps** are traded over the counter (OTC) in that the terms are negotiated and features are customized between the counterparties. However, with futures, Thompson does not like the daily margin monitoring tasks. Additionally, she has concerns over interest rate and counterparty credit risk.
- The overlay will be performed on the assumption of a leverage level of 4, meaning 25% of the investment is provided in cash and 75% borrowed. Financing costs are based on a 2% 3-month LIBOR rate for futures and swaps, with an additional 0.5% financing cost for ETFs.

# 3.6 Asset Allocation Rebalancing

- It is now three months after the overweight position in U.S. equities, and the position has done well. Fixed income has not performed well due to a large rise in interest rates.
- As a result, there has been **noticeable drift** in the QU endowment asset allocation. Rebalancing of the portfolio is performed quarterly for cost control reasons; however, the portfolio drift from the SAA is checked on a monthly basis. At the end of each quarter, if a relatively liquid asset class moves outside the rebalancing corridor, then it is systematically rebalanced back to either the target allocation or to the edge of the corridor.
- For more illiquid asset classes, high transaction costs mean that rebalancing is done more implicitly by altering the commitments and reinvestments when allocations drift to the either end of the corridor.

# 3.6 Asset Allocation Rebalancing

## ➢ SAA, Rebalancing Corridors, and Current (Actual) Allocations

| | Target Allocation (SAA) | Corridor | Min/Max Target | Current Allocation |
|---|---|---|---|---|
| Cash | 1% | ±1% | 0% - 2% | 0.8% |
| Fixed income | 9% | ±3% | 6% - 12% | 6.5% |
| Domestic equity | 15% | ±2.5% | 12.5% - 17.5% | 17.3% |
| International developed equity | 9% | ±2% | 7% - 11% | 11.5% |
| Emerging market equity | 12% | ±2% | 10% - 14% | 13.9% |
| Private equity | 23% | ±5% | 18% - 28% | 19.2% |
| Real assets | 16% | ±3% | 13% - 19% | 13.8% |
| Diversifying strategies | 15% | ±3% | 12% - 18% | 17.1% |
| **Total** | **100.0%** | | | **100.0%** |

# 3.6 Asset Allocation Rebalancing

- Thompson notices the following:
  - International developed equity at a current allocation of 11.5% has exceeded the top end of the corridor (11%) by 0.5%.
  - Fixed income at a current allocation of 6.5% is off significantly from the target of 9% but still within the acceptable range of 6% - 12%.
  - Private equity at a current allocation of 19.2% is near the low end of the corridor (18%).
  - Real assets at a current allocation of 13.8% is near the low end of the corridor (13%).
- As an immediate action, Thompson wishes to reduce the international developed equity allocation and increase the fixed income allocation by 0.5%. That will take the former back to the top edge of its corridor. The question is whether to perform the transaction through the cash market or the derivatives market. She is aware that implementation will take more time in the cash market but is necessary for larger or more important adjustments.

# 3.6 Asset Allocation Rebalancing

- Upon further research, Thompson finds out that the 0.5% rebalancing transaction over a three-month investment horizon will incur 30 bps of transaction costs in the cash market (bid/offer spread of 5 bps, price impact of 5 bps, and cash drag of 20 bps). The cash drag includes the impact of timing delays and disruptions to active manager portfolios.
- The same rebalancing transaction will incur 24 bps of transaction costs in the futures market (bid/offer spread of 3 bps, price impact of 4 bps, and mispricing of 17 bps).

# 3.6 Asset Allocation Rebalancing

- With additional consultations within the team, Thompson then opts to rebalance international developed equity back to the 9% allocation, so that involves a 2.5% decrease to equity as well as a 2.5% increase to fixed income.
- Now, the investment horizon is one year and will incur 60 bps of transaction costs in the cash market (bid/offer spread of 5 bps, price impact of 5 bps, and cash drag of 50 bps). For the futures market, there will be 82 bps of transaction costs (bid/offer spread of 4 bps, price impact of 4 bps, cash drag of 68 bps, and cost of rolling futures contracts of 6 bps).

# Reading R30

## Integrated Cases in Risk Management: Institutional

65-84

# Framework

1. Financial Risk faced by Institutional Investors
   - Long-Term Perspective
   - Dimensions of Financial Risk Management
   - Risk Considerations for Long-Term Investors
   - Risks Associated with Illiquid Asset Classes
   - Managing Liquidity Risk
   - Enterprise Risk Management for Institutional Investors
2. Environmental and Social Risks Faced by Institutional Investors
   - Universal Ownership, Externalities, and Responsible Investing
   - Material Environmental Issues for an Institutional Investor
   - Material Social Issues for an Institutional Investor

# 1. Financial Risk faced by Institutional Investors

## 1.1 Long-Term Perspective

- Long-term perspective allows most Institutional investors to take on certain investment risks that can bear and to invest in in a broad range of alternative asset classes, including private equity, private real estate, natural resources, infrastructure, and hedge funds.
- Will cover key risk considerations faced by long-term institutional investors as they invest in a range of traditional and alternative asset classes, including private equity and infrastructure.
- An important distinguishing feature of long-term institutional investors is their ability to invest in illiquid asset classes.

# 1.2 Dimensions of Financial Risk Management

- Risk management should focus on what types of events can jeopardize the organization's ability to meet its long-term objectives. Existential threats can arise from both financial risks (e.g., market losses and liquidity risk in the form of the inability to meet cash flows) and non-financial risks (e.g., reputational risks).
  - Top-down vs. bottom-up risk analysis
  - Risk management requires both a top-down and a bottom-up perspective. From a top-down perspective, the board and chief investment officer (CIO) set overall risk guidelines for the portfolio that serve as guardrails within which the investment team is expected to operate.
  - The investment team takes a more bottom-up, sub-portfolio approach to managing the risks of each individual portfolio or asset class, while assessing and monitoring their interaction and impact on the risk level of the overall portfolio.

# Dimensions of Financial Risk Management

- Portfolio-level risk vs. asset-class- specific risk
  - ✓ Although risk management for an institutional investor is ultimately about controlling overall portfolio-level risk, risks also need to be managed and controlled at the asset-class or strategy level so that no particular asset class or strategy will have an undue adverse effect on the overall portfolio. Different asset classes require different risk management techniques.
- Return-based vs. holdings-based risk approaches
  - ✓ Financial risk management systems are typically described as being return based (risk estimation relies on the historical return streams of an external manager or a portfolio of securities) or holdings based (risk estimation relies on individual security holdings and the historical returns of those securities in the portfolio).
  - ✓ Return-based systems are relatively easy to implement but may produce risk estimates that are biased.
  - ✓ Holdings-based risk systems tend to be more costly and time-consuming to implement.

# Dimensions of Financial Risk Management

- Absolute vs. relative risk
  - ✓ Absolute risk concerns the potential for overall losses and typically relies on overall portfolio-level metrics, such as standard deviation, conditional value at risk, and maximum drawdown.
  - ✓ Relative risk concerns underperformance versus policy benchmarks and relies on such metrics as tracking error (the standard deviation of returns relative to a benchmark).
- Long-term vs. short-term risk metrics
  - ✓ Modern risk systems used by institutional investors typically focus on calculating volatility, value at risk, and conditional value at risk using sophisticated risk factor techniques.
  - ✓ Long-term risk metrics are typically calculated using Monte Carlo simulation, where asset-class returns are simulated on the basis of a set of forward-looking capital market assumptions (typically expected returns, volatilities, and correlations) and total assets are calculated including cash flows.

# Dimensions of Financial Risk Management

- Quantitative vs. qualitative risks
  - ✓ Quantitative risk management techniques are backward looking by nature and typically parametric (i.e., they rely on historical data to estimate parameters). It does not provide a prediction of the future.
  - ✓ Risk management is about assessing the potential for future losses, and quantitative tools need to be complemented with qualitative assessments. However, with qualitative assessments, it is important for risk managers to be aware of their own biases.
- Pre- and post-investment risk assessment
  - ✓ Although risk management efforts typically focus on measuring the risks of existing investments, a sound risk management philosophy ensures a proper assessment of financial risks prior to making investments.

# 1.3 Risk Considerations for Long-Term Investors

- Long-term institutional investors have the ability to invest a significant part of their portfolio in risky and illiquid assets because of their long-term investment horizon and relatively low liquidity needs.

| Objectives and Risk Considerations by Institutional Investor Type | | |
|---|---|---|
| **Institutional Investor** | **Main Objective** | **Key Risk Consideration** |
| Pension funds | Provide retirement income to plan participants | Inability to meet pension payouts to beneficiaries |
| Sovereign wealth funds | Varies by type of SWF but most have been set up to provide some future financial support to the government | Inability to provide financial support to the government |
| Endowments and Foundations | Provide financial support in perpetuity while maintaining intergenerational equity | Inability to provide financial support to the institution or to the mission |

# Risk Considerations for Long-Term Investors

- Long-term institutional investors aim to strike the right balance between these two extremes in designing their investment policy or strategic asset allocation.
- This process usually involves a Monte Carlo simulation exercise where asset-class returns are simulated on the basis of a set of forward-looking capital market assumptions and total assets are calculated including cash flows.
- Institutional investors need liquidity to meet payouts, meet capital calls on their illiquid investments, and rebalance their portfolios.

| Liquidity Needs and Sources for Institutional Investors | |
|---|---|
| **Liquidity Needs** | **Liquidity Sources** |
| Outflows (e.g., pension payouts to beneficiaries, university payouts, and financial support to the government) | Inflows (e.g., pension contributions, gifts, donations, government savings) |
| Capital calls for illiquid investments | Distributions from illiquid investments |
| Portfolio rebalancing | Investment income and proceeds from selling liquid asset classes (cash, fixed income, public equities) |

# Risk Considerations for Long-Term Investors

- We first start with discussing how liquidity needs may increase during a crisis.
  - First, payouts might increase as the beneficiary requires additional financial support.
  - Second, there might be an acceleration of capital calls as attractive investment opportunities present themselves during a crisis.
  - Finally, rebalancing flows will be more significant during a crisis because of significant market movements.

# Risk Considerations for Long-Term Investors

- How sources of liquidity might dry up under those circumstances.
  - First, inflows might decrease in a crisis.
  - Second, distributions from illiquid investments might be reduced because there are no attractive exit points due to depressed prices or lower profitability.
  - Finally, investments that are otherwise liquid might become less liquid or simply undesirable to exit from.

- In conclusion, the ***main risk*** that long-term institutional investors face is having insufficient liquidity during a significant market downturn to meet their obligations and rebalance their portfolios.

# 1.4 Risks Associated with Illiquid Asset Classes

- Illiquid asset classes are typically subject to a drawdown structure where committed capital is called at an unknown schedule and investors receive profits at an unknown schedule. As a result, investors need to hold sufficient liquid assets to meet capital calls from their private fund managers.
- In addition to the importance of adequately managing liquidity needs when investing in illiquid assets, these asset classes tend to be subject to stale pricing, appraisal-based valuations, and a lagged response to movements in public markets. As a result, illiquid asset classes exhibit returns that are smooth, understating the true volatility and correlation with publicly traded asset classes.
- Illiquid asset classes cannot be rebalanced easily and costlessly.

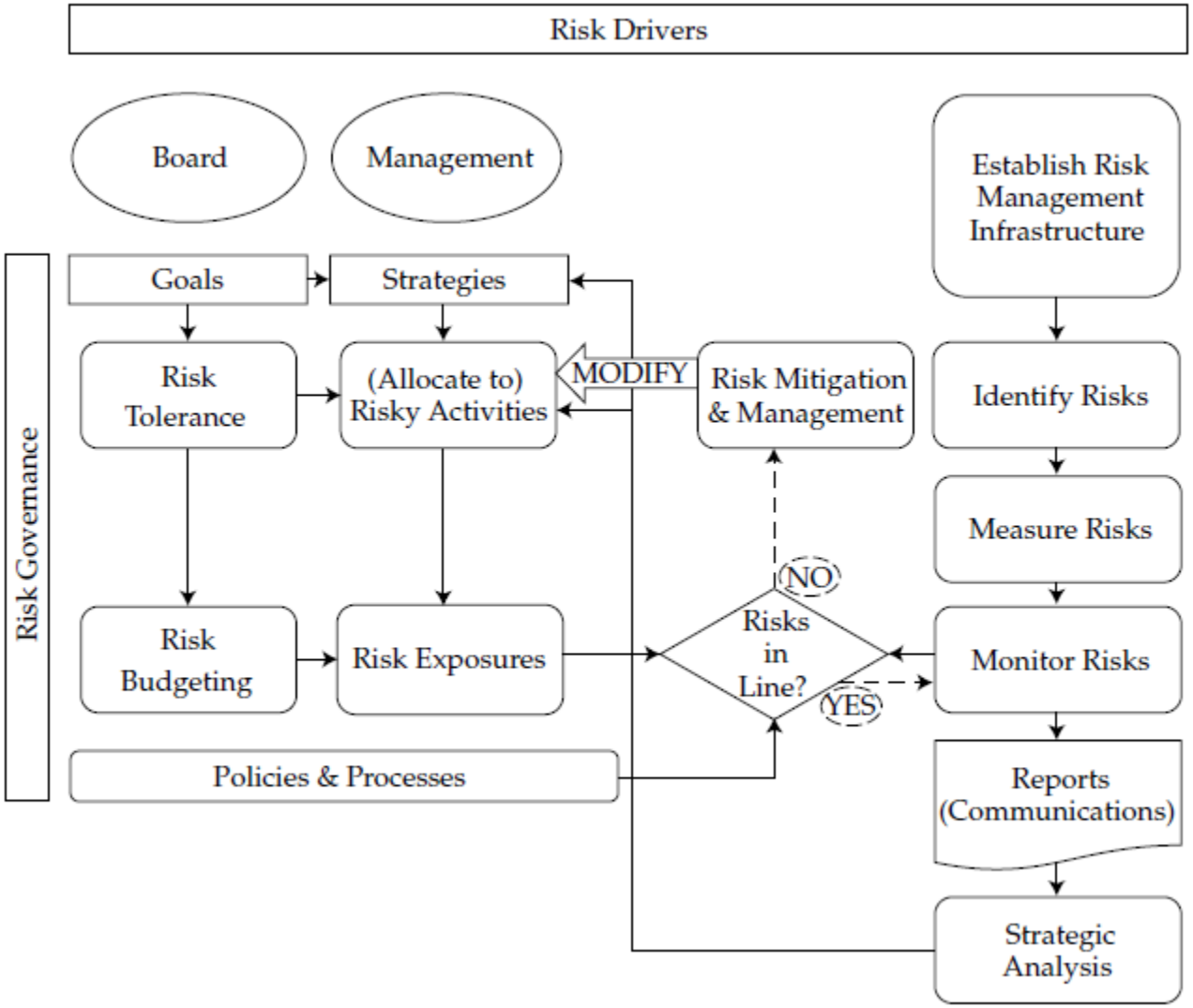
# Risks Associated with Illiquid Asset Classes

- **Cash flow modeling**
  - Illiquid asset classes are subject to a drawdown structure. The investor (typically the limited partner, or LP, in the partnership agreement) commits capital, and this capital gets drawn down over time at the discretion of the general partner, or GP.
- **Addressing return smoothing behavior of illiquid asset classes**
  - Use public market proxies in place of private asset classes
  - Unsmooth observed returns of private asset classes. The objective of the latter is to remove the serial correlation structure of the original return series.
- **Direct vs. fund investments in illiquid asset classes**
  - Large pension funds and sovereign wealth funds have increasingly opted to invest directly in illiquid asset classes rather than through the more typical limited partner (LP)–general partner (GP) setup.

# 1.5 Managing Liquidity Risk

- **Liquidity management steps**
  - Establish liquidity risk parameters
  - Assess the liquidity of the current portfolio and how it evolves over time
  - Develop a cash flow model and project future expected cash flows
  - Stress test liquidity needs and cash flow projections
  - Put in place an emergency plan

# 1.6 Enterprise Risk Management for Institutional Investors



## 2.1 Universal Ownership, Externalities, and Responsible Investing

- we define **universal owners** as large institutional investors that effectively own a slice of the whole economy and hence are generally managing their total market exposure, instead of focusing on a subset of issuers.
- An **externality** is an impact that an individual's or a corporation's activities have on a third party.
- According to the UN-backed Principles for **Responsible Investment (PRI)**, environmental costs for universal owners are reflected in portfolio impacts via insurance premiums, taxes, inflated input prices, and the physical costs associated with weather-related disasters.

## 2.2 Material Environmental Issues for an Institutional Investor

- **Physical climate risks**
  - As we have observed since the beginning of the current century, climate change has profoundly affected the physical world we live in.
- **Impact on real assets**
  - Physical risks that we have discussed could create increased levels of stress on such assets as residential and commercial real estate and infrastructure, such as roads and railways.
- **Climate transition risks**
- **Climate opportunities**
  - Although most of the investor focus in dealing with climate change has been on managing physical and transition risks, exciting investment opportunities are arising in companies focused on climate change mitigation and adaptation.

# 2.3 Material Social Issues for an Institutional Investor

- **Managing community relations and the social license to operate**
  - Good corporate behavior is usually well received by the community relations, leading to a sustainable and mutually beneficial long-term relationship.
- **Labor issues in the supply chain**
  - A large portion of the manufacturing and assembling activities across such key sectors as technology and garments has been outsourced to developing and frontier markets. It has also come at the cost of exploitation of workers in such supply chains.
- **The "just" transition**
  - Sustainable development involves meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

# It’s not an end but just the beginning.

"There are only two creatures," says a proverb, "who can surmount the pyramids-the eagle and the snail.“

俗话说：“能登上金字塔的生物，只有两种——鹰和蜗牛。”

# 问题反馈

- 如果您认为金程课程 **讲义/题库/视频** 或其他资料中存在错误，欢迎您告诉我们，所有提交的内容我们会在最快时间内核查并给与答复。
- **如何告诉我们?**
  - 将您发现的问题通过电子邮件告知我们，具体的内容包含：
    - ✓ 您的姓名或网校账号
    - ✓ 所在班级（eg.2205CFA三级长线无忧班）
    - ✓ 问题所在科目（若未知科目，请提供章节、知识点）和页码
    - ✓ 您对问题的详细描述和您的见解
  - 请发送电子邮件至：academic.support@gfedu.net
- **非常感谢您对金程教育的支持，您的每一次反馈都是我们成长的动力。后续我们也将开通其他问题反馈渠道（如微信等）。**