

## **Learning Module 2: Alternative Investment: Performance and Returns**

### **LOS 2a: describe the performance appraisal of alternative investments**

#### **Alternative Investments: Features, Form, and Structure**

Alternative investments, such as hedge funds, private equity, and real estate, possess unique characteristics that must be considered when assessing their performance relative to other investments or more traditional asset classes like stocks and bonds over time. These features include:

- **Staggered capital commitments over time:** Unlike traditional investments, where the entire capital is invested upfront, alternative investments often require capital commitments to be made over some time. For example, a private equity fund may call for capital when identifying investment opportunities.
- **Longer required investment horizons:** Alternative investments often require a longer investment horizon. For instance, a real estate investment might take several years to yield returns.
- **Reduced liquidity:** Alternative investments are often less liquid than traditional investments. For example, a hedge fund might have a lock-up period during which investors cannot withdraw funds.
- **Less efficient markets:** Alternative investments often operate in less efficient markets. For instance, the market for private equity investments is less transparent and less regulated than the stock market.

These features, highlighted in previous lessons, must be incorporated into the performance appraisal for alternative investments.

#### **Alternative Investment Returns**

Alternative investment returns typically deviate from a normal distribution. This necessitates using different measures of risk and return than those used for more traditional asset classes. For example, the standard deviation, a common measure of risk for traditional investments, might not be appropriate for alternative investments due to their non-normal return distributions.

## **Comparability with Traditional Asset Classes**

Traditional asset classes, such as public equity and debt securities, are standardized claims that do not require any further capital commitments and provide identical claims to periodic cash flows. For instance, if you buy shares of a company like Apple or Microsoft, you are entitled to a share of the company's profits in the form of dividends. Similarly, suppose you buy a bond issued by a company or a government. In that case, you are entitled to receive periodic interest payments and the return of the principal amount at the end of the bond's term.

The prices of these publicly traded securities are often continuously quoted on stock exchanges, making it easy to compare their performance over a specific period. Large peer groups of similar investments are available, and common indexes like the S&P 500 or the FTSE 100 are used to benchmark returns. This makes the performance appraisal of publicly traded securities straightforward to implement and evaluate.

On the other hand, alternative investments are customized investments. Their distinctive features complicate the performance appraisal between investments and across asset classes. These features include:

- the timing of cash inflows and outflows for specific investments,
- the use of borrowed funds,
- the valuation of individual portfolio positions over specific phases of the investment life cycle, and
- more complex fee structures and tax and accounting treatment.

For instance, a private equity investment may require additional capital commitments at various stages of the investment, and the return on investment may depend on the successful execution of a business plan or a successful exit strategy such as an IPO or a sale to another company. Similarly, a hedge fund investment may involve complex strategies such as short selling or leverage, and the performance appraisal may need to consider the risk-adjusted return and the impact of fees and expenses.

Therefore, while traditional asset classes offer simplicity and standardization, alternative investments offer the potential for higher returns and diversification benefits but at the cost of higher complexity and risk.

## Performance Appraisal and Alternative Investment Features

When evaluating alternative investments, it's crucial to focus on four key areas:

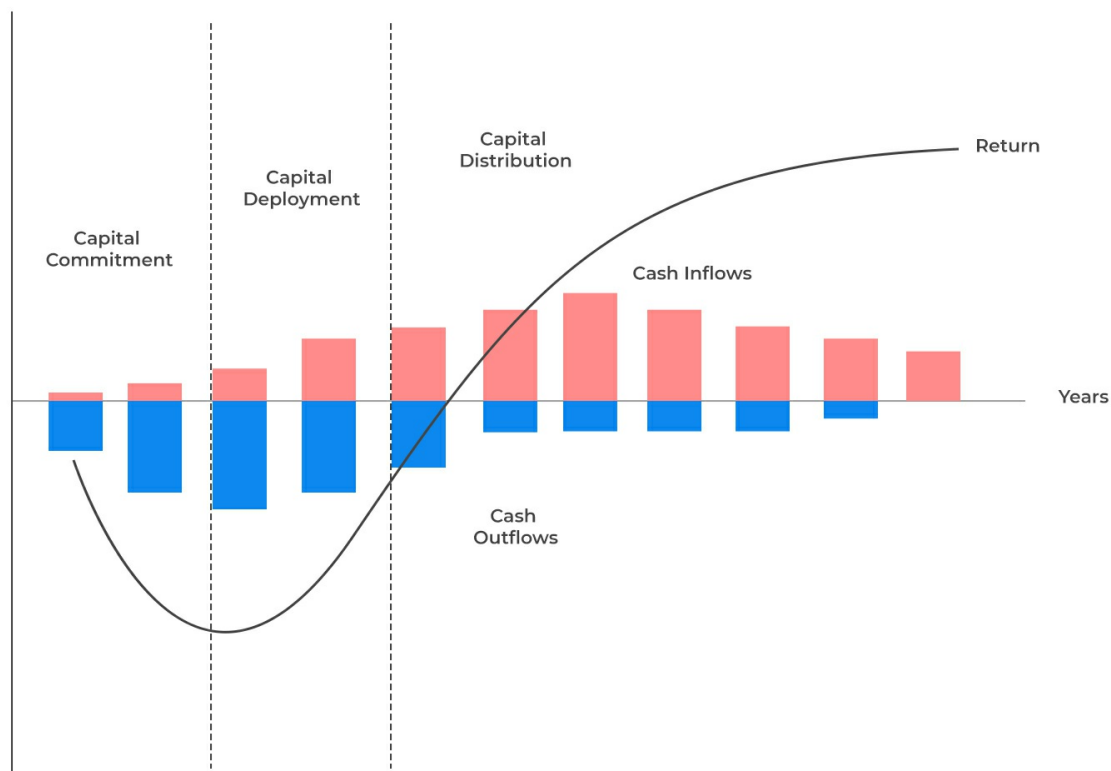
- **The life cycle phase of the investment:** For instance, a real estate investment might be in the construction phase, the rental income phase, or the selling phase.
- **The amount of borrowed funds used to maintain the market position** could be the amount of mortgage taken out on a rental property or the amount of leverage used in a hedge fund.
- **The valuation of the assets:** This could be the current market value of a property in a real estate fund or the valuation of a startup in a venture capital fund.
- **The fund's fee structure:** This could be the management fee and performance fee charged by a hedge fund or private equity fund.

### 1. Investment Life Cycle

Alternative investments usually involve a longer investment life cycle with distinct phases characterized by net cash outflows and inflows. These are shown in the following diagram (J-curve):



## Investment Life Cycle



The J-curve effect represents the initial negative return in the capital commitment phase followed by an acceleration of returns through the capital deployment phase. Returns often level off as capital is distributed to investors, investments are sold, and the fund is closed.

Each of the investment life cycles is discussed below:

- **Capital commitment:** At this phase, fund managers identify and select appropriate investments, with either immediate capital or capital call (commitment of capital). For instance, a manager may invest in early-stage company venture capital, a more mature firm for private equity, or one or more properties in the case of real estate. As such, this phase is characterized by negative returns due to immediate fees and expenses

incurred before capital deployment. For example, a private equity fund might charge management and setup fees at this stage.

- **Capital deployment:** In this phase, alternative managers may use funds for construction or property improvements (real estate or infrastructure) or initiate operations for a startup. Cash outflows are typically higher than cash inflows, with management fees further decreasing returns. For instance, a real estate fund might be spending money on building or renovating properties at this stage.
- **Capital distribution:** This phase occurs when the investment strategy succeeds, leading to asset appreciation and/or income generation in excess costs. The fund may realize substantial capital gains from liquidating or exiting its investments. For example, a venture capital fund might be selling its stake in a successful startup at this stage.

## Internal Rate of Return (IRR)

The internal rate of return (IRR) is often used as an initial approach to calculate investment returns for these investments, which include private equity and real estate investments. The Internal Rate of Return (IRR) considers both the timing and magnitude of cash flows invested in an investment as well as the timing and magnitude of cash flows generated by the investment, including any tax benefits.

IRR calculations involve certain assumptions about a financing rate for outgoing cash flows and a reinvestment rate for incoming cash flows. The IRR is the critical metric for assessing longer-term alternative investments in private equity and real estate.

The IRR can be calculated as follows:

$$0 = \sum_{t=0}^T \frac{CF_t}{(1 + IRR)^t}$$

### Where:

- $CF_t$  is the cash flow at time  $t$

- IRR is the internal rate of return
- T is the total time period

## Multiple of Invested Capital (MOIC)

Multiple of invested capital (MOIC) or money multiple is the ratio of the total value of the distributions and assets yet to be sold (residual asset values) to an initial investment. MOIC does not consider the timing of the cashflows, but it is easy to calculate and understand. A MOIC of 3x implies that an investor earned three times the initial investment. Time is very significant in MOIC. For instance, a MOIC of 3x achieved in 2 years is more beneficial than the same MOIC achieved in 30 years.

$$\text{MOIC} = \frac{(\text{Realized Value of Investment} + \text{Unrealized Value of Investments})}{\text{Total Capital Invested}}$$

### Example: Calculating MOIC

MapleLeaf Ventures started a fund with a capital commitment of CAD 400 million. The fund calls in CAD 200 million at the end of Year 1. By the end of Year 5, CAD 900 million is distributed back to its investors, and the fund retains an asset value of CAD 300 million.

1. **Calculate the Total Paid-In Capital:** This includes the initial capital call (400 million) and the Year 1 capital call (200 million) = 600 million.
2. **Calculate MOIC:** Using the formula:

$$\text{MOIC} = \frac{(\text{Realized Value of Investment} + \text{Unrealized Value of Investments})}{\text{Total Capital Invested}}$$

We get:

$$\text{MOIC} = \frac{900 \text{ million} + 300 \text{ million}}{600 \text{ million}} \approx 2 \times$$

After five years, the calculated MOIC for MapleLeaf Ventures is approximately 2x. This implies that for every dollar (or, in this case, Canadian dollar) invested into the fund, the investors

received back approximately two times throughout the investment period (in this case, five years). The result suggests a successful investment strategy, as the fund was able to return close to double the capital that was initially invested.

This is after accounting for capital calls, management fees, investor distributions, and the remaining asset value. However, it's important to note that while MOIC provides a valuable snapshot of the overall return, it does not account for the time value of money. Therefore, it's often used with other metrics, such as the Internal Rate of Return (IRR), to give a more comprehensive view of investment performance.

## 2. Use of Borrowed Funds

Alternative investments, such as hedge funds, private equity, and real estate, often use borrowed funds to enhance investment returns. This financial leverage can amplify both gains and losses by enabling investors to take a market position larger than the committed capital. For instance, a real estate investor might use a mortgage to finance a portion of a property purchase, thereby increasing the potential return on their capital.

### Calculating Leveraged Rate of Return

Assuming an investor has a cash investment  $V_c$  with a periodic rate of return  $r$  and is able to borrow at a periodic rate of  $r_b$  to increase the investment size by borrowed funds of  $V_b$ , the leveraged rate of return  $r_L$  for the period can be calculated as follows:

$$r_L = \frac{r \times (V_c + V_b) - (V_b \times r_b)}{V_c}$$

The relationship between the cash portfolio return,  $r_c$ , and the leveraged rate of return,  $r_L$ , can be shown as follows:

$$r_L = r + \frac{V_b}{V_c}(r - r_b)$$

### Example: Calculating Leveraged Rate of Return

Quercus Capital Fund, a private equity fund with a capital of USD200 million, often employs leverage to invest in a mix of convertible bonds.

**Scenario 1:** Given that Quercus's underlying positions yield a return of 10% and the fund leveraged an additional USD100 million at a borrowing cost of 3%, the leveraged return is:

$$V_c = 200$$

$$V_b = 100$$

$$r_L = 0.10 + \left(\frac{100}{200}\right)(0.10 - 0.03) = 13.5$$

**Scenario 2:** If Quercus's underlying positions suffer a loss of 3% and the fund borrowed USD100 million at 3%, the leveraged return is:

$$V_c = 200$$

$$V_b = 100$$

$$r_L = -0.03 + \left(\frac{100}{200}\right)(-0.03 - 0.03) = -6$$

The second scenario showcases the risks associated with leverage. When the investment strategy doesn't pan out as expected, leverage can significantly magnify losses. As shown in this example, we can see that leverage is a double-edged sword. While it has the potential to magnify returns in favorable conditions, it can also amplify losses when things don't go as planned. Investors and fund managers using leverage need to be aware of these risks and ensure they have risk management strategies to mitigate potential downsides.

## Hedge Funds and Leverage

Hedge funds leverage their portfolios using derivatives or borrowing capital from prime brokers. They negotiate margin requirements, interest, and fees in advance of trading. In a standard margin financing arrangement, the prime broker lends shares, bonds, or derivatives to the hedge fund, while the hedge fund deposits cash or other collateral into a margin account, typically



based on specified fractions of the investment positions.

The margin account represents the hedge fund's net equity in its positions. The minimum margin required depends on the riskiness of the investment portfolio and the creditworthiness of the hedge fund. For example, a hedge fund might use borrowed funds to take a larger position in a particular stock, potentially amplifying its returns if the stock price increases.

Suppose the margin account or the hedge fund's equity in a position falls below a designated threshold. In that case, the lender triggers a margin call and asks the hedge fund to provide additional collateral. Failing to meet margin calls can exacerbate losses, as the hedge fund may need to sell the losing position. This liquidation can result in further losses if the order size is substantial enough to impact the security's market price before the fund can adequately exit the position.

### **3. Valuation of Alternative Assets**

#### **Characteristics of Alternative Assets**

Alternative assets, including real estate, private equity, and hedge funds, are often illiquid. This makes it challenging to assess their performance over time and draw comparisons with traditional assets. All investments must be recorded at their fair value, a market-based measure that reflects the assumed exit price for a seller. Although interim accounting values may not be as crucial during periods without expected cash flows, relying solely on these can give investors a misleading sense of stability and a low correlation to other assets.

There is a three-level hierarchy when measuring the fair value of assets:

**Level 1: This** includes quoted prices of assets in active markets that may be accessed at the measurement date. They include exchange-traded public equity securities, where observed closing market prices are used

**Level 2:** These are asset/ liability inputs other than those in Level 1 that are directly or indirectly observable. They include over-the-counter interest rate derivatives, where a pricing model based on quoted market prices is used.

**Level 3:** These are unobservable inputs used to measure the value of assets/liabilities with little to no market activity as of the measurement date. These include private equity or real estate investments, where fair is based on cash flow projection based on available market participant assumptions.

## **Considerations for Level 3 Asset Pricing**

While traditional asset classes often rely on Level 1 inputs, valuing private equity, real estate, and other infrequently traded assets using Level 3 inputs presents greater challenges.

Interim accounting values may hold less significance for partnerships during periods with no expected cash flows in or out. Over time, the absence of new market information can anchor the value of these long-term investments near their initial cost, adjusting the carrying value only when impairments or realization events occur. This relatively stable accounting approach may create a perception of lower correlation and reduced volatility compared to other investments. However, a more realistic assessment may arise if managers are compelled to liquidate a portfolio prematurely.

In Level 3 asset pricing, regardless of the model employed by a manager in such situations, it is essential to independently test, benchmark, and calibrate the model to industry-accepted standards to ensure consistency in the approach.

Due to the potential for conflicts of interest when estimating value, hedge funds must establish in-house valuation procedures, communicate them to clients, and consistently adhere to them.

Nevertheless, it's crucial for alternative asset investors to focus on the nature of assets that can only be valued on a "mark-to-model" basis. Such models may reflect imperfect theoretical valuations rather than true liquidation values. The illiquid nature of these assets means that estimates, rather than observable transaction prices, often contribute to their valuation. Consequently, returns may appear more stable or inflated, while the true volatility of returns may be understated.

In conclusion, any investment vehicle heavily reliant on Level 3 priced assets warrants increased scrutiny and due diligence.

## 4. Alternative Investment Fees

Unlike traditional asset classes such as stocks and bonds, which typically involve a flat management fee, **alternative investments** often impose additional performance fees. These fees are calculated as a percentage of the fund's periodic returns. This unique fee structure can make the performance appraisal of alternative investments challenging to generalize due to the variability of results based on the timing and nature of an investor's involvement in a particular vehicle.

Let's consider an example to illustrate this point. Suppose an investor decides to invest substantial capital in a hedge fund during its early stages. In this case, the investor might face significantly lower incentive fees due to the fund's initial growth phase. The fund manager may offer lower fees to attract more capital. Alternatively, if the investor is willing to accept more stringent restrictions on redemptions, such as lock-up periods, they may also be offered lower fees.

On the other hand, consider an investor who enters a private equity fund following a significant drop in its value. If the fund's value increases, the investor may be subject to performance fees. However, an earlier investor who experienced a sharp decrease in value from its peak might be exempt from such fees for the same period. Many alternative investment funds use a 'high-water mark' or 'hurdle rate' mechanism to ensure that performance fees are only charged on net gains.

## Question

An investor is considering entering a private equity fund following a significant drop in its value. The equity has a hurdle rate and high-water mark provisions. If the fund's value increases after his investment, what might be the *most likely* impact on the performance fees he is subject to and why?

- A. The investor may be subject to performance fees, typically charged on net gains following a significant drop in the fund's value.
- B. The investor may be exempt from performance fees, as these are typically waived for investors who enter the fund following a significant drop in value.
- C. The performance fees will remain unchanged regardless of the fund's value, as alternative investment fees are typically flat and do not vary with the fund's performance.

**The correct answer is A.**

When an investor enters a private equity fund following a significant drop in its value, he may be subject to performance fees if the fund's value increases after his investment. Many alternative investment funds use a 'high-water mark' or 'hurdle rate' mechanism to ensure that performance fees are only charged on net gains. The high-water mark is the highest value that the fund has reached in the past.

The fund manager only earns a performance fee when the fund's value exceeds its previous high-water mark. Therefore, if the fund's value increases after the investor's entry, the fund may reach a new high-water mark, and the investor may be subject to performance fees.

**B is incorrect.** While it might seem fair to exempt investors who enter the fund following a significant drop in its value from performance fees, this is typically not the case. The high-water mark or hurdle rate mechanism ensures that performance fees are charged on net gains, regardless of when an investor enters the fund.

Therefore, if the fund's value increases after the investor's entry, he may still be subject to performance fees.

**C is incorrect.** While some alternative investment funds may charge flat fees, they commonly charge performance fees that vary with the fund's performance. Therefore, the investor's performance fees may change if the fund's value increases after his investment.

## **LOS 2b: calculate and interpret alternative investment returns both before and after fees**

### **Hedge Fund Strategies and Management**

In discussing alternative investment returns, consider hedge funds. Hedge funds employ intricate strategies to generate high returns with low correlation to the broader market. These strategies necessitate the use of sophisticated portfolio management tools and a wide range of skills, making them more costly to operate. Instead of paying a high flat management fee, investors prefer a portion of the compensation to be tied to the performance delivered by the strategy, known as a **performance fee**.

There are also other complex compensation arrangements that aim to align the interests of the manager and the investor. These structures are designed to reward investors for early involvement, larger investments, and/or longer lockup periods. For example, a hedge fund might offer a lower management fee for investors who commit their capital for a longer period. These complex fee structures affect returns for different investors in the same fund, as well as returns before and after fees across various alternative investments.

### **Impact of Investor Redemptions**

Investor redemptions can lock in or amplify losses for hedge funds. Redemptions often occur when a hedge fund is underperforming. For instance, if a hedge fund loses 20% of its value, investors might start to redeem their shares, forcing the fund to sell assets to meet these redemptions. This could potentially force the hedge fund manager to liquidate some positions, potentially receiving particularly unfavorable prices due to redemption pressures while also incurring transaction costs.

### **Reputation and Lockup Period**

A hedge fund's ability to demand a long lockup period while raising a significant amount of investment capital largely depends on the reputation of the firm or the hedge fund manager. For example, a well-known hedge fund manager with a successful track record might be able to

demand a 2-year lockup period, while a less-known manager might only be able to demand a 1-year lockup period.

## **Funds of Hedge Funds**

Funds of hedge funds may provide more redemption flexibility than direct investors in hedge funds due to special redemption arrangements with the underlying hedge fund managers, the maintenance of additional cash reserves, access to temporary bridge-loan financing, or simply avoiding less liquid hedge fund strategies. For instance, a fund of hedge funds might have a redemption period of 90 days, while the underlying hedge funds might have a redemption period of 180 days.

## **Redemption Terms and Liquidity**

Redemption terms should ideally be designed to match the expected liquidity of the assets being invested in. However, even with careful planning, an initial drawdown can escalate into something much more serious when it involves illiquid and obscure assets. These events are not easily modeled. For example, a hedge fund that invests in illiquid assets like private equity might have a redemption period of 1 year, while a hedge fund that invests in liquid assets like stocks might have a redemption period of 30 days.

## **Alternative Investment Returns**

### **Custom Arrangements**

Alternative investments often involve customized fee arrangements that combine management and performance-based fees. These fees can vary based on the size, timing, and terms of an investor's participation in the investment over time.

- **Fee Arrangement Based on Liquidity Terms and Asset Size:**

For instance, in the real world, Limited Partnerships (LPs) such as Blackstone or KKR may

charge different rates depending on the liquidity terms that an investor is willing to accept, with longer lockups resulting in lower fees. Managers may also offer discounts on their fees for larger investors or for placement agents who introduce these investors.

Smaller investment funds that exhibit strong performance and have limited capacity may choose to sustain higher fees. They might even opt to turn away larger investors rather than accepting lower fee arrangements.

- **Founders Shares:**

Managers sometimes offer incentives known as founder's class shares to entice early participation in startup funds. For example, a new hedge fund might offer founders shares that entitle investors to a lower fee structure. These may apply only to the first \$100 million in assets invested, although cutoff thresholds vary. An additional option is to decrease fees for early founder's share investors when the fund reaches specific critical mass or performance milestones.

- **"Either/Or" Fees:**

Significant institutional investors have urged alternative investment funds to adopt a mutually exclusive fee structure, requiring them to decide between a fixed management fee or a variable performance fee.

For instance, managers commit to either applying a lower 1% management fee to cover expenses in less favorable years or accepting a higher 30% incentive fee above an annually agreed-upon hurdle to motivate and reward managers in profitable years, whichever is higher.

## **Alternative Investment Return Calculations**

Return calculations for alternative investments can vary significantly based on the nature of the investments. For instance, more liquid alternative investments such as Real Estate Investment Trusts (REITs), commodity index exchange-traded funds, or other frequently traded investments typically have a straightforward management fee structure akin to common assets. However,



investments that are characterized by longer life cycles, illiquidity, and less transparency, such as private equity, hedge funds, and real estate, often employ performance fees with certain modifications to incentivize managers to act in the best interest of investors.

## Impact of Different Fee Arrangements

Let's consider a private equity fund with a General Partner (GP) who charges a fixed management fee as a percentage of assets under management (AUM) of  $r_m$ , beginning-of-period assets of  $P_0$ , end-of-period assets of  $P_1$ , and a GP performance fee ( $p$ ) that is a percentage of total return. The GP's return in currency terms  $R_{GP}$  can be calculated as follows:

$$R_{GP} = (P_1 \times r_m) + \max[0, (P_1 - P_0) \times p]$$

The investor's periodic rate of return,  $r_i$ , can be calculated as follows:

$$r_i = \frac{(P_1 - P_0 - R_{GP})}{P_0}$$

Where:

- $r_i$  = investor's periodic rate of return
- $P_1$  = end-of-period assets
- $P_0$  = beginning-of-period assets
- $R_{GP}$  = GP's return in currency terms

## Example 1: Alternative Investment Return Calculations

GreenWood Hedge Fund has an initial investment capital of \$150 million. It charges a 1.5% management fee based on year-end AUM and a 25% performance fee. In its first year, GreenWood generated a 25% return.

Assuming management fees are calculated using an end-of-period valuation, calculate the GP's return and investor's return at the end of the first year in the following scenarios:

**Scenario 1:** Performance and management fees are calculated independently:

**Solution**

To determine the GP's return in currency terms ( $R_{GP}$ ) and the investor's periodic rate of return ( $r_i$ ), we proceed as follows:

1. Calculate  $P_1$  (end-of-period assets):

$$\begin{aligned} P_1 &= P_0 \times (1 + \text{return in the first year}) \\ &= 150 \times 1.25 = \$187.5 \text{ million} \end{aligned}$$

2. Calculate  $R_{GP}$  (GP's return in currency terms):

$$\begin{aligned} R_{GP} &= (P_1 \times r_m) + \max[0, (P_1 - P_0) \times p] \\ &= (187.5 \times 0.015) + (37.5 \times 0.25) \\ &= 2.8125 + 9.375 = \$12.1875 \text{ million} \end{aligned}$$

3. Calculate  $r_i$  (investor's periodic rate of return):

$$\begin{aligned} r_i &= \frac{(P_1 - P_0 - R_{GP})}{P_0} \\ &= \frac{(187.5 - 150 - 12.1875)}{150} \\ &\approx 0.16875 \text{ or } 16.875\% \end{aligned}$$

**Scenario 2:** Performance fee is calculated from the return net of management fee:

In a scenario where the performance fee is calculated from the return net of the management fee, the GP's return in currency terms ( $R_{GP(\text{Net})}$ ) and the investor's net return ( $r_i$ ) under this fee structure, we proceed as follows:

1. Calculate  $R_{GP(\text{Net})}$  (GP's return considering performance fee net of management fees):

$$\begin{aligned} R_{GP(\text{Net})} &= (P_1 \times r_m) + \max\{0, [P_1(1 - r_m) - P_0] \times p\} \\ &= (187.5 \times 0.015) + \max\{0, (187.5 \times 0.985 - 150) \times 0.25\} \\ &\approx \$11.484 \text{ million} \end{aligned}$$

2. Calculate  $r_i$  (investor's net return):

$$\begin{aligned}
 r_i &= \frac{(P_1 - P_0 - R_{GP(Net)})}{P_0} \\
 &= \frac{(187.5 - 150 - 11.484)}{150} \\
 &\approx 17.34\%
 \end{aligned}$$

Under this new fee structure for GreenWood Estates:

Intuitively, when performance fees are calculated net of management fees, it reduces the base upon which the performance fee is calculated, leading to a lower total fee for the GP and a slightly higher net return for the investor.

## Performance Fee Modifications

Performance fee modifications can have varying effects on the periodic investor returns depending on the timing of an investment. For instance, in the case of a hard hurdle, both investors would realize a fee reduction equal to  $P_t \times r_h \times p$  (that is, the product of the end-of-period fund value for year  $t$ , the hurdle rate, and the performance fee). Nevertheless, in scenarios involving a high-water mark, the fee adjustment's time-dependent nature produces varying outcomes for an investor who joins the fund at a later stage.

### Example: Impact of Hurdle Rate on Returns

For GreenWood Hedge Fund, assume that an 8% hurdle rate ( $r_h$ ) is introduced. Also, the performance fee is calculated from the return net of the management fee.

To determine the GP's return in currency terms ( $R_{GP(Net \text{ with Hurdle})}$ ) and the investor's net return ( $r_i$ ) under this fee structure, we proceed as follows:

1. Calculate  $R_{GP(Net \text{ with Hurdle})}$  (GP's return considering performance fee net of management fees and the hurdle rate):

$$\begin{aligned}
 R_{GP(Net \text{ with Hurdle})} &= (P_1 \times r_m) + \max\{0, [P_1(1 - r_m) - P_0 \times (1 + r_h)] \times p\} \\
 &= (187.5 \times 0.015) + \max\{0, (187.5 \times 0.985 - 150 \times 1.08) \times 0.25\} \\
 &\approx \$8.484 \text{ million}
 \end{aligned}$$

2. Calculate  $r_i$  (investor's net return):

$$\begin{aligned}
 r_i &= \frac{(187.5 - 150 - 8.484)}{150} \\
 &\approx 17.34\%
 \end{aligned}$$

$$r_i = \frac{(187.5 - 150 - 8.484)}{150} \approx 19.34\%$$

In GreenWood scenario, an 8% hurdle rate meant that only returns above 8% were subject to the 25% performance fee. This structure further reduced the GP's fee to approximately \$8.484 million and increased the net investor return to around 19.34%.

## Example: Impact of High-Water Mark on Returns in Year 2

GreenWood Hedge Fund continues its operations into the second year, with its fund value declining to \$100 million. Given the previous fee structure (the performance fee is calculated from the return net of the management fee) and the introduction of a high-water mark provision, calculate the GPs return and investors' return at the in the second year.

To determine the GP's return in currency terms ( $R_{GP(High-Water Mark)}$ ) and the investor's net return ( $r_i$ ) under this fee structure, we proceed as follows:

1. Calculate  $R_{GP(High-Water Mark)}$  (GP's return considering the high-water mark provision):

$$\begin{aligned} R_{GP(High-Water Mark)} &= (P_2 \times r_m) + \max\{0, (P_2 - P_{HWM}) \times p\} \\ &= (100 \times 0.015) + \max\{0, (100 - (187.5 - 8.484)) \times 0.25\} \\ &= \$1.5 \text{ million} \end{aligned}$$

Note that  $P_{HWM}$  is defined as the maximum fund value at the end of any previous period net of fees. As such, in this case,

$$P_{HWM} = 187.5 - 8.484 = 179.016$$

2. Calculate  $r_i$  for the second year (investor's net return):

$$\begin{aligned} r_i &= \frac{(P_2 - P_1 - R_{GP(High-Water Mark)})}{P_1} \\ &= \frac{(100 - 179.016 - 1.5)}{179.016} \approx -44.98\% \end{aligned}$$

The investor's net return for the second year is calculated by considering the decline in the

fund's value and deducting the GP's fees. The result is a significant negative return because the fund's value dropped significantly from the high-water mark and was further diminished by the management fee.

The high-water mark provision ensures that the GP doesn't double-dip by earning fees on the same profits in subsequent periods. It's a measure to ensure that performance fees are genuinely reflective of the GP's ability to generate "new" profits above and beyond the highest value the fund has previously achieved.

## **Clawback Provision**

In some instances, the timing of returns can have a significant impact on manager fees and investor returns. This is particularly evident in the case of a clawback provision. A clawback provision is a contractual clause typically found in private equity and hedge fund structures, which allows for the recovery of money already paid out. If the fund performs well in the early years, the manager may receive a performance fee. However, if the fund subsequently underperforms, the clawback provision ensures that the manager returns the previously paid performance fee, thereby aligning the interests of the manager and the investors.

## **Example: WestBridge Capital Fund's Investments**

WestBridge Capital Fund invests \$30 million in new ventures, dividing it into two equal parts:

- \$15 million into NewtonTech Ltd. (a leveraged buyout).
- \$15 million into Electronix Startup (a seed-stage venture).

One year later, NewtonTech was acquired by a larger tech firm for \$33 million after costs. Three years later, Electronix Startup undergoes bankruptcy, and WestBridge is unable to recover any of its initial investment. If WestBridge's fee agreement as a general partner (GP) specifies a 25% performance fee of aggregate profits (p) with a clawback provision, which performance fees will WestBridge accrue, and what will it ultimately receive?

## **Solution**

**NewtonTech Investment Return:**

$$\begin{aligned}\text{Gain} &= \text{Sale Price} - \text{Initial Investment} \\ &= \$33 \text{ million} - \$15 \text{ million} = \$18 \text{ million}\end{aligned}$$

**Electronix Startup Investment Loss:**

$$\text{Loss} = \$0 - \$15 \text{ million} = -\$15 \text{ million}$$

**Aggregate Gain of WestBridge after Three Years:**

$$\begin{aligned}\text{Total Gain} &= \text{Gain from NewtonTech} + \text{Loss from Electronix} \\ &= \$18 \text{ million} - \$15 \text{ million} = \$3 \text{ million}\end{aligned}$$

**Performance Fee Accrual:**

WestBridge would initially accrue 25% of the \$18 million aggregate profit from the sale of NewtonTech at the end of the first year:

$$\text{Initial Accrued Fee} = \$18 \text{ million} \times 25\% = \$4.5 \text{ million}$$

This amount is often held in escrow for the benefit of the GP but is not immediately disbursed.

**Adjustment Due to Electronix's Failure:**

The bankruptcy of Electronix Startup in Year 3 reduces the original \$18 million gain by \$15 million. Thus, the aggregate fund gain at the end of Year 3 is now only \$3 million. This adjusted net profit results in a performance fee of:

$$\text{Adjusted Fee} = \$3 \text{ million} \times 25\% = \$750,000$$

Due to the clawback provision, WestBridge would then have to return:

$$\begin{aligned}\text{Return Amount} &= \text{Initial Accrued Fee} - \text{Adjusted Fee} \\ &= \$4.5 \text{ million} - \$750,000 = \$3.75 \text{ million}\end{aligned}$$

This \$3.75 million would be returned to Limited Partner (LP) investor capital accounts due to the clawback provision.

WestBridge Capital Fund would ultimately receive a performance fee of \$750,000, but it would have to return \$3.75 million from the initially accrued fees due to the clawback provision after Electronix Startup's failure.

## **Relative Alternative Investment Returns**

Investors who are interested in alternative investments often seek higher risk-adjusted returns that have a low correlation with common asset classes such as stocks and bonds. The performance of these investments, which can range from private equity to real estate, is usually tracked based on relative returns.

In other words, similar to common asset classes, the returns on individual alternative investments are typically compared to a benchmark of investments that have similar features. However, these benchmarks can be interpreted differently or have different characteristics when it comes to alternative investments.

For instance, using a composite benchmark for private equity or real estate investments can be misleading if a specific investment is in a different life cycle phase than most of its peers. To illustrate, consider a private equity investment in a start-up tech company. Comparing its returns to a benchmark that includes mature, established companies would not provide an accurate picture.

More accurate results can be achieved by comparing returns between such investments of the same vintage year on an annual or "since inception" basis. However, factors such as lockups and illiquidity can prevent an investor from reacting to underperformance by selling an investment.

Hedge fund indexes warrant increased scrutiny because of the evolving composition of funds included in a benchmark over time. Research indicates that more than a quarter of all hedge funds experience failure within their initial three years, often as a result of performance issues that result in investor withdrawals and fund closures.

## **Survivorship Bias**

The omission of these failed funds from a particular benchmark can introduce a type of selection

bias termed "survivorship bias," potentially causing investors to develop excessively optimistic return projections. Survivorship bias is a significant issue among hedge fund indexes that only include current investment funds and exclude those funds that are no longer available.

Consider an example where an investor is looking at a hedge fund index that only includes funds that have been successful and excludes those that have failed. The investor might be misled into thinking that investing in hedge funds is a surefire way to make money, not realizing that the index does not include funds that have failed and thus does not accurately represent the risk involved.

## **Backfill Bias**

Backfill bias relates to the manner and timing of incorporating returns into a benchmark index. For instance, a fund manager might initiate multiple hedge fund investments simultaneously and include only the most prosperous funds in an index a couple of years after their establishment. The subsequent inclusion or "backfilling" of historical performance data selectively can inflate the average reported returns, resulting in what is referred to as backfill bias.

Due to survivorship and backfill biases, benchmark indexes, such as hedge fund indexes, may not accurately reflect the average hedge fund performance but only the returns of those hedge funds that initially performed best and/or have not failed.



## Question

Which of the following could be the *most likely* impact of investor redemptions when a hedge fund is declining in value?

- A. No significant impact on the hedge fund as it can easily sell assets without incurring any losses or transaction costs.
- B. Investor redemptions would increase the value of the hedge fund as it would lead to an influx of cash from the sale of assets.
- C. It could potentially lock in or amplify losses for the hedge fund due to the forced sale of assets at unfavorable prices and additional transaction costs.

**The correct answer is C.**

Investor redemptions could potentially lock in or amplify losses for the hedge fund due to the forced sale of assets at unfavorable prices and additional transaction costs. When a hedge fund is underperforming and investors start redeeming their shares, the fund is forced to sell assets to meet these redemptions. This can lead to a downward spiral, as the fund may have to sell assets at unfavorable prices, thereby locking in losses.

Additionally, the fund incurs transaction costs when selling these assets, which further erodes its value. This situation can be particularly damaging if the fund is invested in illiquid assets that are difficult to sell quickly without incurring significant price discounts. The forced liquidation of assets can also disrupt the fund's investment strategy and potentially lead to further underperformance. Therefore, investor redemptions can have a significant negative impact on a struggling hedge fund.

**A is incorrect.** This statement is not accurate because selling assets, especially in a distressed situation, often incur transaction costs and can result in selling at unfavorable prices, which can further exacerbate the fund's losses.

**B is incorrect.** While it's true that selling assets brings in cash, this does not necessarily increase the value of the hedge fund. If the assets are sold at a loss, the fund's value will decrease. Furthermore, the influx of cash may be offset by the outflow of cash due to investor redemptions. Therefore, investor redemptions do not necessarily increase the value of the hedge fund.