R47 Introduction to Alternative Investments

Version 1.0

1. Introduction

This reading will cover the basic categories and characteristics of alternative investments and how to value them. We will also briefly look at the role alternative investments play in diversifying a portfolio.

Traditional investments refer to long-only positions in stocks, bonds, and cash. All other investments are classified as alternative investments.

Alternative investments can be divided into five main categories:

- Hedge funds
- Private capital
- Natural resources
- Real estate
- Infrastructure

The general characteristics of alternative investments are listed below:

- Narrow manager specialization: For example, within private equity, you have leveraged buyout and venture capital. There are managers who focus only on leveraged buyouts within private equity.
- Relatively low correlation with traditional investments. But correlation may increase during times of financial crises.
- Low level of regulation and less transparency as compared to traditional investments
- Limited and potentially problematic risk and return data: The risk and return data of hedge fund and private equity indices are biased, as we will see later.
- High fees because of active management and expertise required in managing the portfolio. The fees often include performance or incentive fees.
- Concentrated portfolios
- Restrictions on redemptions (i.e., "lockups" and "gates")

1.1 Why Investors Consider Alternative Investments

Since the mid-1990s assets under management in alternative investments have grown significantly. Institutional investors such as endowments and pension funds, and family offices have primarily contributed to this growth.

These investors consider alternative investments due to:

- The potential for portfolio diversification. Alternative investments have low correlation with traditional asset classes.
- The opportunities for enhanced returns. Adding alternative investments can increase the portfolio's risk-return profile.
- The potentially increased income through higher yields. During low-interest rate periods, alternative investments can provide significantly higher yields as compared to traditional investments.

1.2 Categories of Alternative Investments

The main categories of alternative investments are:

Hedge funds

- They are private investment vehicles that manage portfolios of securities and derivative positions using a variety of strategies.
- Some hedge funds aim for absolute returns independent of market performance.

Private capital

Private equity:

- Investment in private equity can be made either via direct investment (including co-investment) or indirectly via private equity funds.
- Private equity funds invest in the equity of private companies or public companies that want to become private.
- They are further divided into
  - *Leveraged buyout funds*: Invest in established companies.
  - *Venture capital funds*: Invest in startups or early-stage companies.

Private debt:

- Includes debt provided to private entities.
- Forms of private debt include:
  - *Direct lending*: private loans with no intermediary.
  - *Mezzanine loans*: private subordinated debt.
  - *Venture debt*: private loans to startups or early-stage companies.
  - *Distressed debt*: private loans to distressed companies, e.g., companies facing bankruptcy.

Real estate

- Investments in buildings or land either directly or indirectly.
- Securitization has broadened the definition of real estate investing and it now includes:
  - *Private commercial real estate equity*: e.g., ownership of an office building
  - *Private commercial real estate debt*: e.g., directly issued mortgages on commercial property
  - *Public real estate equity*: e.g., real estate investment trusts (REITS)
  - *Public real estate debt*: e.g., mortgage-backed securities (MBS).

Natural Resources

Commodities:

- Investment in physical assets such as grains, metals, crude oil, etc.
- The main vehicles used for investment in commodities are commodity future contracts and funds benchmarked to commodity indices.

Agricultural land (or farmland):

- Investments in land used for the cultivation of crops or livestock.
- Income can be generated from the growth, harvest and sale of crops or livestock; or by leasing the land back to farmers.

Timberland:

- Investments in natural forests or managed tree plantations.
- The return comes from the sale of trees, wood, and other timber products.

Infrastructure

- Investments in capital intensive, long-lived, real assets such as roads, dams, and schools, which are intended for public use and provide essential service.
- Example of infrastructure investing is a public–private partnership (PPP) approach in which both government and investors have a stake.

Other

- Investments in any other tangible asset such as art, fine wine, stamps, coins, etc.
- Or intangible assets such as patents and litigation actions.

2. Investment Methods

2.1 Methods of Investing in Alternative Investments

The three methods of investing in alternative investments are:

- **Fund investing:** The investor contributes capital to a fund, and the fund makes investments on the investors' behalf, e.g., investments in a PE fund.
- **Co-investing:** The investor can make investments alongside a fund, e.g., investments in a portfolio company of a fund.
- **Direct investing:** The investor makes a direct investment in a company or project without the use of an intermediary, e.g., direct investments in infrastructure or real estate assets.

2.2 Advantages and Disadvantages of Direct Investing, Co-Investing, and Fund Investing

Exhibit 2 from the curriculum summarizes the advantages and disadvantages of the different methods of investing.

	Advantages	Disadvantages
Fund investing	• Fund managers offer investment services and expertise • Lower level of investor involvement compared with the direct and co-investing methods	• Costly management and performance fees • Investor must conduct thorough due diligence when selecting the right fund because of the wide

	• Access to alternative investments without possessing a high degree of investment expertise • Potentially valuable diversification benefits • Lower minimum capital requirements	dispersion of fund manager returns
Co-investing	• Investors can learn from the fund's process to become better at direct investing • Reduced management fees • Allows more active management of the portfolio compared with fund investing and allows for a deeper relationship with the manager	• Reduced control over the investment selection process compared with direct investing • May be subject to adverse selection bias • Requires more active involvement compared with fund investing, which can be challenging if resources and due diligence experience are limited
Direct investing	• Avoids paying ongoing management fees to an external manager • Greatest amount of flexibility for the investor • Highest level of control over how the asset is managed	• Requires more investment expertise and a higher level of financial sophistication compared with fund investing and co-investing, resulting in higher internal investment costs • Less access to a fund's ready diversification benefits or the fund manager's sourcing network • Requires greater levels of due diligence because of the absence of a fund manager • Higher minimum capital requirements

2.3 Due Diligence for Fund Investing, Direct Investing, and Co-Investing

Investors have to conduct a proper due diligence before investing in alternative investments. The due diligence approach depends on the method of investing: fund, co-investing, or direct.

Due diligence for fund investing

Hedge fund and private equity returns depend heavily on the fund manager. Due diligence of the manager is important to ascertain he has the right skill and expertise. When evaluating

past results, investors should be wary of consistent, good performance as there is a possibility of fraud.

Due diligence for fund investing should assess whether:

- the manager can effectively pursue the proposed investment strategy
- the appropriate organizational structure and policies for managing investments, operations, risk, and compliance are in place
- the fund terms appear reasonable

Due diligence for direct investing

Due diligence for direct investing requires the investor to conduct a thorough investigation into the important aspects of the target asset or business such as:

- the quality of the management team
- the quality of its customers
- the competitive landscape
- revenue generation
- key risks etc.

Direct investors often supplement their due diligence with analysis prepared by external consultants.

Due diligence for co-investing

Since direct investing is an element of co-investing, the due diligence process is similar to direct investing.

The key difference between the two is that: In co-investing, investors often depend heavily on the due diligence conducted by the fund manager. Whereas, direct investing due diligence may be more independent because the direct investing team is typically introduced to opportunities by third parties and they have more control over the due diligence process.

3. Investment and Compensation Structures

3.1 Partnership Structures

The most common structure for many alternative investments is a partnership. It consists of two entities:

- **General partner (GP)**: The fund manager is the general partner (GP). The GP is responsible for managing the fund and making investment decisions. The GP theoretically bears unlimited liability for anything that goes wrong.
- **Limited partners (LP):** LPs are outside investors who provide capital to the fund in return for a fractional partnership in the fund. They bear the risk associated with investments. LPs usually play a passive role and are not involved with the management of the fund.

The partnership between the GP and LPs is governed by a limited partnership agreement (LPA). It is a legal document that outlines the rules of the partnership and establishes the framework for the fund's operations.

3.2 Compensation Structures

The general partner typically receives a **management fee** based on assets under management (commonly used for hedge funds)or committed capital (commonly used for private equity). Management fee typically ranges from 1% to 2%.

Apart from the management fee, the GP also receives a **performance fee** (also called incentive fee or carried interest) based on realized profits. Performance fees are designed to reward GPs for good performance. A common fee structure is 2 and 20 which means 2% management fee and 20% performance fee.

Generally, the performance fee is paid only if the returns exceed a **hurdle rate** (also called a preferred rate). A hurdle rate of 8% is typically used.

- Hard hurdle rate: The GP earns fees on annual returns in excess of the hurdle rate.
- Soft hurdle rate: The GP earns fees on the entire annual gross return as long as the set hurdle is exceeded.

3.3 Common Investment Clauses, Provisions, and Contingencies

Common investment clauses, provisions and contingencies specified in the LPA include:

Catch-up clause: A catch-up clause allows the GP to receive 100% of the distributions above the hurdle rate until he receives 20% of the profits generated, and then every excess dollar is split 80/20 between the LPs and GP. This clause is meant to make the manager whole so that their incentive fee is a function of the total return and not solely on the return in excess of the hurdle rate.

Example:

Assume that the GP has earned an 18% IRR on an investment, the hurdle rate is 8%, and the partnership agreement includes a catch-up clause.

In this case the distribution would be as follows:

- The LPs would receive the entirety of the first 8% profit.
- The GP would receive the entirety of the next 2% profit—because 2% out of 10% amounts to 20% of the profits accounted for so far.
- The remaining 8% would be split 80/20 between the LPs and the GP

Thus, the GP effectively earns: 18% x 20% = 3.6% and the LP effectively earns 18% x 80% = 14.4%.

In the absence of a catch-up clause the distributions would have been:

- The LPs would still receive the entirety of the first 8% profit.

- The remaining 10% would be split 80/20 between the LPs and GP.

Thus, in this case the GP effectively earns a lower return of (18% - 8%) x 20% = 2.0%

High water mark: In some cases, the incentive fee is paid only if the fund has crossed the high-water mark. A high-water mark is the highest value net of fees (or the highest cumulative return) reported by the fund so far for each of its investors. This is to ensure investors do not pay twice for the same performance.

Waterfall: The waterfall defines the way in which cash distributions will be allocated between the GP and the LPs. In most waterfalls, a GP receives a disproportionately larger share of the total profits relative to their initial investment. This is typically done to incentivize GPs to maximize profitability.

There are two types of waterfalls:

- Whole-of-fund (or European) waterfalls: As deals are exited, all distributions go to the LPs first. The GP does not participate in any profits until the LPs receive their initial investment and the hurdle rate has been met.
- Deal-by-deal (or American) waterfalls: Performance fees are collected on a per-deal basis. This is more advantageous for a GP as he can get paid before LPs receive both their initial investment and their preferred rate of return on the entire fund.

Clawback: A clawback provision allows LPs to reclaim a part of the GP's performance fee. For example, if a fund makes profitable exits in early years, but the subsequent exits are less profitable, then the GP has to pay back profits to ensure that the profit split is in line with the fund prospectus.

4. Hedge Funds

4.1 Characteristics of Hedge Funds

History: Alfred Winslow Jones created a "hedged" fund in 1949. The purpose of this fund was to hedge long-only stock portfolio. The fund followed three key principles:

- Always maintain short positions.
- Always use leverage.
- Only charge an incentive fee of 20% of the profits with no fixed fees.

Over time, the principles have changed. The following are the characteristics of hedge funds today:

- Aggressively managed portfolios of investments across asset classes and regions, use leverage, take long/short positions, and/or use derivatives.
- Generate high returns: either absolute or over a specified benchmark with minimal restrictions.
- Set up a private investment partnership with a limited number of investors who are willing to make a large initial investment.

- Investors are required to keep the money with the fund for a certain period – lockup period. Redemptions are not immediate. Usually, require a minimum notice period of 30 to 90 days.
- Invest anywhere there is a high return opportunity as restrictions are less.

A diversified portfolio of hedge funds is often referred to as a **fund of funds**. This instrument makes hedge funds accessible to smaller investors or to those who do not have the resources, time, or expertise to choose among hedge fund managers. Other benefits include:

- Better redemption terms
- Due diligence expertise
- More diversification as they invest in hedge funds across geographies and strategies

However, fund of funds may charge an additional 1% management fee and 10% incentive fee on top of the fees charged by the underlying hedge funds. This double layer of fees can significantly reduce the after fee returns to the investor.

4.2 Hedge Fund Strategies

There are several hedge fund strategies. These fall in four major categories:

- **Event-driven:** A short term, bottom-up strategy that aims to profit from pricing inefficiencies before a major potential corporate event. Ex: bankruptcy, acquisition, merger, restructuring of a company, asset sale (large pocket of land in a prime location).
- **Relative value:** A strategy that seeks to profit from price discrepancy between related securities such as stocks and bonds.
- **Macro:** Uses a top-down approach to identify trends based on changes in economic policies across the globe. The strategies could focus on currency markets, fixed income markets, or based on changes in interest rates. Trades are based on expected movement in economic variables.
- **Equity hedge:** Bottom-up strategy. Not focused on event-driven or macro strategies. Take long and short positions in publicly traded equity/equity derivative securities.

The sub-classifications under each category are listed below:

Sub-classification under event-driven category	
Merger Arbitrage	• Go long (buying) on the stock of the company being acquired and go short on the stock of the acquiring company. • Risk: many corporate events such as merger do not occur as planned and if the fund has not closed its positions on time, it may incur losses.
Distressed/restructuring	• Purchase and profit from debt securities of companies that are either in bankruptcy or near bankruptcy.

	• Strategy: the fixed income securities would be priced at a significant discount to their par value; these can be sold later at a profit at settlement (liquidation or equity stake) • Other complicated strategies: Buy senior debt/short junior debt. • Buy preferred stock/short common stock.
Activist	• Purchase a managing equity stake in a public company that is believed to be mismanaged, and then influence its policies. • May advocate restructure, changes in strategy, hiving off non-profitable units, etc.
Special Situations	• Purchase equity of companies engaged in restructuring activities other than merger/bankruptcy.
Sub-classification under relative value category	
Fixed-Income Convertible Arbitrage	• A market neutral strategy to exploit mispricing in convertible bond and issuer's stock. • Long position in convertible debt + short position in issuer's common stock. • As the name implies, it has a theoretical zero-beta portfolio. *Note: A convertible bond is a bond (hybrid security) that can be converted into common stock at a pre-determined price at a pre-determined time. Usually, the yield is lower than a comparable bond.*
Fixed-Income Asset Backed	• Exploit mispricing of asset-backed securities.
Fixed-Income General	• Exploit mispricing between two corporate issuers (i.e. long/short trades), between corporate and government issuers, or between different parts of the same issuer's capital structure.
Volatility	• Go long or short market volatility within a specific asset class.
Multi-Strategy	• Generate consistently absolute positive returns irrespective of how the equity, debt, or currency markets are performing. • Does not focus on one strategy, but allocates capital across different strategies where investment opportunities exist. Ex: equity long/short, convertible arbitrage, merger arbitrage, etc.

	• Unlike funds of funds, multi-strategy funds execute strategies within one fund group and they do not have the extra layer of fees associated with a fund of funds.
The curriculum does not present any sub-classifications under the macro category.	
Sub-classifications under the equity hedge category	
Market Neutral	• Uses quantitative/fundamental analysis to identify undervalued/overvalued securities. • **Strategy**: buy (long) undervalued securities and sell (short) overvalued securities. Hold equal dollar amounts in both positions. • Neutral with respect to market risk, i.e., the portfolio beta is close to zero.
Fundamental Growth	• Uses fundamental analysis to identify companies with high growth potential and capital appreciation. • **Strategy**: long position in such stocks.
Fundamental Value	• Uses fundamental analysis to identify undervalued companies. • **Strategy**: long position in such stocks.
Short Bias	• Uses quantitative/fundamental analysis to identify overvalued securities. • **Strategy:** short position in overvalued securities.
Sector Specific	• Uses quantitative/fundamental analysis to identify mispricing in a specific sector. • **Strategy:** long on undervalued securities/short on overvalued securities.

4.3 Hedge Funds and Diversification Benefits

Due to different strategies across hedge funds, the diversification benefits associated with every hedge fund is not necessarily meaningful. It is believed that less-than-perfect correlation of hedge funds with stocks provides diversification benefit.

However, for the period since 2000, the low correlation claim holds only for 2000-02; between 2003 and 2009, there was a high correlation between stocks and hedge funds. This implies that during financial crisis periods, the correlation between hedge fund performance and stock market performance may increase. However, the losses for hedge funds may be less than for the equity markets.

Between 2009 – 2019, most hedge funds failed to beat the performance of equity and bonds. However, they were still a part of institutional asset allocations because of their risk-diversification properties.

5. Private Capital

5.1 Overview of Private Capital

Private capital is a broad term for funding provided to companies that is not sourced from the public equity or debt markets.

Capital that is provided in the form of equity investments is called private equity, whereas capital that is provided as a loan or other form of debt is called private debt.

5.2 Description: Private Equity

Private equity means investing in private companies or public companies with the intent to take them private. The companies in which the private equity funds invests are called portfolio companies because they will become part of the private equity fund portfolio.

The three main categories of private equity are:

- Leveraged buyouts: Borrowed funds are used to buy an established company.
- Venture capital: This refers to investments in companies that have not been established yet.
- Growth capital: It refers to minority equity investments in mature companies that require funds for growth or expansion, restructuring, entering a new territory, an acquisition, etc.

Leveraged Buyouts

Leveraged buyout is an acquisition of an established public or private company with borrowed funds. If the target company is a public company, then after the acquisition, the company becomes private, i.e., the target company's equity is no longer publicly traded.

The acquisition is significantly financed through debt, hence the name leveraged buyout. LBOs capital structure consists of equity, bank debt, and high-yield bonds. The firm (GP) puts in some money of its own, raises a certain amount from LPs, and a substantial amount of money is borrowed in the form of debt to invest in companies.

For example, assume the GP invests in a target company that requires an investment of $100 million. In this, the GP invests $20 million of its money (equity), $70 million from bank debt, and the remaining $10 million is raised by issuing high-yield bonds.

There are three changes that happen to a company as a result of a leveraged buyout:

- An increase in financial leverage.
- Change in management or the way the company is run.
- If the target company is previously public, after the LBO it becomes private.

Why LBO?

- To improve the company's operations; to add value and eventually increase cash flows and profits.

- Leverage will enhance potential returns once the restructuring/growth strategy is complete and the company turns profitable. Debt is central to an LBO structure. Buyouts are rarely done entirely using equity.

There are two types of LBOs:

- Management buyouts (MBO): Current management team purchases and runs the company.
- Management buy-ins (MBI): Current management team is replaced and the acquirer team runs the company.

Venture Capital

Venture capital firms invest in private companies (portfolio companies) with significant growth potential. The time horizon is typically long-term. The distinction between VC and LBO is that the latter invests in mature companies, whereas VC invests in growing companies with a good business plan and strong prospects for future growth.

Other important points related to VCs are given below:

- Venture capitalists are actively involved in the companies they invest in.
- The rate of return expected depends on the stage the company is in when the investment happens.
- VC investing can take place at various stages
  Formative stage: Company is still being formed.
  - *Angel investing*: Financing provided at the idea stage.
  - *Seed stage financing*: Financing provided for product development and market research.
  - *Early stage*: Financing for companies moving towards operation, but before commercial production and sales. Fund to initiate commercial production and sales.

  Later stage financing: For expansion after commercial production and sales but before IPO.
  Mezzanine stage: Preparing to go public.

Exit Strategies

The goal of private equity is to improve new or underperforming businesses and exit them at high valuations. Typically, investments (target companies) are held for an average of 5 years. The holding period may be longer or shorter.

Common exit strategies are:

- Trade sale: Selling the company to a competitor or any strategic buyer. It can be done through auction or private negotiation. For instance, if a PE firm (GP) invested in a small generic pharma company, it may sell it to large pharma firm after a few years.
- IPO: Company goes public, i.e., it sells all or some of its shares to public investors.

- Recapitalization: Increases leverage or introduces it to the company and pays itself a dividend. Not a true exit strategy, but introduces leverage or re-leverages.
- Secondary sale: Assume you are a VC firm that focuses on early stage companies. You may sell the portfolio company later to another private equity firm that focuses on later stage companies.
- Write off/liquidation: This is a worst-case scenario when the investment has not gone as planned. The company's prospects do not look promising, so the VC firm sells the assets or writes it off to focus on other projects.

5.3 Description: Private Debt

Private debt refers to various forms of debt provided by investors to private entities.

Key private debt strategies include:

- Direct lending: Debt capital is provided at higher interest rates, directly to entities that require capital, but are unable to get capital from traditional bank lenders. Lenders subsequently receive interest, the original principal, and possibly other payments in exchange for their investment.
- Mezzanine debt: Refers to private credit that is subordinated to senior secured debt but is senior to equity in the borrower's capital structure. Because of the higher risk, investors commonly demand a higher interest rate and may also require options for equity participation.
- Venture debt: Debt funding provided to start-up or early-stage companies that may be generating little or negative cash flow. Entrepreneurs may seek venture debt as a way to access funds without further diluting shareholder ownership in their companies. Similar to mezzanine debt, venture debt may contain additional feature that compensate investors for the increased risk.
- Distressed debt: Refers to buying debt of mature companies with financial difficulty such a bankruptcy proceeding. Investors seek companies with a temporary cash-flow problem but a good business plan. They may also get actively involved in the management of the company and help turn it around.

5.4 Risk/Return of Private Equity

Private equity may provide higher return opportunities relative to traditional investments. Some of its benefits include the following:

- Access to private companies.
- Ability to actively manage and improve portfolio companies.
- Easy to use leverage.

However, the higher return is often associated with higher illiquidity and leverage risks.

5.5 Risk/Return of Private Debt

Private debt investments can provide a higher return as compared to traditional bonds. However, this higher return if often connected to higher levels of risk.

5.6 Diversification Benefits of Investing in Private Capital

Investing in private capital can provide moderate diversification benefits because of their low correlation to stocks and bonds. Investors should identify and invest in the best performing private equity funds.

6. Natural Resources

6.1 Overview of Natural Resources

Natural resources include:

- **Commodities:** Can be further classified into:
  - Hard: Commodities that are mined e.g., copper, gold, silver; and commodities that are extracted e.g., crude oil, natural gas.
  - Soft: Commodities that are grown over a period of time e.g., grains, livestock, and cash crops like coffee.
- **Agricultural land (or farmland):**
  - Investments in land used for the cultivation of crops or livestock.
  - Income can be generated from the growth, harvest and sale of crops or livestock; or by leasing the land back to farmers.
- **Timberland:**
  - Investments in natural forests or managed tree plantations.
  - The return comes from the sale of trees, wood, and other timber products.

Up to about 20 years ago, investors looking for exposure to natural resources invested mainly via financial instruments (stocks and bonds). Instead of investing in the physical land and the products that come from it, investors focused on the companies that produced natural resources. Nowadays, however, due to the wide variety of direct investments available (ETFs, limited partnerships, REITS, swaps, and futures), investors typically participate in these assets directly.

6.2 Characteristics of Natural Resources

Commodities

Commodities are physical products that can be standardized on quality, location, and delivery for investment purposes.

Generally, commodity investments take place through derivative instruments, because of the high storage and transportation costs incurred when holding commodities physically. The underlying asset of a commodity derivative may be a single commodity or an index of

commodities. The return on commodity investment is based mainly on price changes rather than an income stream such as dividends.

In order to be transparent, investable, and replicable, commodity indexes typically use the price of the futures contracts rather than the prices of the underlying physical commodities.

Commodity sectors include:

- Energy - oil, natural gas, coal, electricity etc.
- Base metals - copper, aluminum, zinc etc.
- Precious metals - gold, silver, platinum etc.
- Agriculture - grains, livestock, coffee etc.
- Others - carbon credits, freight, forest products etc.

How are commodity futures contracts priced?

- The price of a futures contract can be calculated using the following formula:
  Future price $\approx$ Spot price $(1 + r)$ + Storage costs – Convenience yield
  where: convenience yield is the value associated with holding the physical asset;
  r is the short-term risk-free interest rate
- Future prices may be higher or lower than spot prices, based on convenience yield.
- For no arbitrage to occur, Future price ≈ Spot price (1+r). But commodities incur storage costs. So, they must be added to the future price and we get Future price ≈ Spot price (1 + r) + storage costs. Storage and interest costs are collectively known as "cost of carry".
- Why subtract the convenience yield? Because the buyer does not possess the commodity as of now, until the end of the contract. Since he has given up this convenience, it must be subtracted from the future price. That's how we arrive at Future price ≈ Spot price (1 + r) + storage costs - convenience yield
- Futures price may be higher or lower than the spot price based on the convenience yield.

  Contango: Future price > Spot price Markets tend to be in contango when there is little or no convenience yield.

  Backwardation: Future price < Spot price Markets tend to be in backwardation when the convenience yield is high

Timberland

Timberland provides an income stream through the sale of trees, wood, and other timber products. Timberland can be thought of as both a factory and a warehouse. The trees can be easily stored by simply not harvesting them. The trees can be harvested based on the price: more harvest when prices are up and delayed harvest when prices are down.

The three return drivers for timberland investments include: biological growth, change in prices of lumber (cut wood), and underlying land price change.

Additionally, since trees consume carbon as part of their life cycle, timberland considered a sustainable investment that mitigates climate-related risks.

Farmland

Farmland is perceived to provide a hedge against inflation. Two types of farm crops include row crops that are planted and harvested, and permanent crops that grow on trees. Like timberland, farmland also provides an income component related to harvest quantities and agricultural commodity prices. However, it does not provide production flexibility, as farm products must be harvested when ripe.

Similar to timber land, the return drivers for farmland are: harvested quantities, commodity prices, and land price appreciation.

6.3 Risk/Return of Natural Resources

Risk/Return: Commodities

Commodities offer potential for returns, portfolio diversification, and inflation protection.

Commodity spot prices are a function of supply and demand, the costs of production and storage, value to users, and global economic conditions.

- Supplies of commodities depend on production and inventory levels.
- Demand of commodities depends on the consumption needs of end users.
- Demand may be high while supply may be low during economic growth; conversely, demand may be low and supply high during times of economic slowdown.
- If demand changes very quickly during any period, resulting in supply-demand mismatch, it may lead to price volatility.

Risk/Return: Timberland and farmland

Timberland and farmland investments have similar risks as other real estate investments in raw land. However, weather is major risk factor for these investments. Bad weather conditions can drastically reduce harvest yields.

Another important risk factor is the international competitive landscape. Unlike other real estate that is mainly impacted by local factors, timberland and farmland produce commodities that are globally traded; therefore, they are impacted by global factors.

6.4 Diversification Benefits of Natural Resources

Diversification Benefits: Commodities

Commodities are attractive to investors not only for the potential profits but also because:

- They provide a good inflation hedge. Some commodity prices are a component of inflation calculations e.g., food and energy.
- They provide effective portfolio diversification. Historically, the correlation between commodities and traditional investments has been low.

Diversification benefits: Timberland and farmland

ESG investors looking for responsible and sustainable investing can include timberland and farmland in their portfolios. These investments can help mitigate climate change.

Timberland and farmland have also exhibited low correlation with traditional investments. Thus, they can provide effective diversification benefits.

6.5 Instruments

Instruments: Commodities

Commodity investments are typically made through derivatives as the storage and transportation costs for holding physical commodities are significant. Commodity derivative contracts may trade on exchanges or over the counter. The popular derivatives include futures, forwards, options, and swaps.

Commodity exposure can also be achieved through:

- Exchange traded products (either funds or notes).
- Managed futures (also known as CTAs)
- Funds that specialize in specific commodity sectors e.g., private energy partnerships are similar to PE funds and can be used to gain exposure to the energy sector.

Instruments: Timberland and Farmland

The primary investment vehicles for timberland and farmland are investment funds. These funds could be offered publicly via REITs or privately via limited partnerships.

Large investors can also consider direct investments in these assets.

7. Real Estate

7.1 Overview of the Real Estate Market

Real estate has two major sectors:

- **Residential**: Includes individual single-family detached homes and multi-family attached units owned by the residents. Residential real estate is the largest sector, making up some 75% of the market globally.
- **Commercial**: Commercial real estate primarily includes office buildings, shopping centers, and warehouses. When residential real estate properties (described above) are owned with the intent to rent, they are classified as commercial real estate.

The key reasons for investing in real estate are:

- Potential for competitive long-term returns (income and capital appreciation).
- Rent for long-term leases will lessen the impact of economic shocks.
- Diversification because of low correlation with other asset classes such as stocks, bonds.
- Inflation hedge.

Investment characteristics of real estate are as follows:

- Indivisibility – requires large capital investments
- Illiquidity
- Unique characteristics (no two properties are identical).
- Fixed location.
- Requires professional operational management.
- Local markets can be very different from national or global markets.

7.2 Characteristics: Forms of Real Estate Ownership

Real estate investing can be categorized along two dimensions: public/private markets and debt/equity based. Exhibit 27 presents the four quadrants for the basic forms of real estate investments with examples:

Basic forms of real estate investments and examples

	Debt	Equity
Private	• Mortgages • Construction lending • Mezzanine debt	• Direct ownership of real estate: ownership through sole ownership, joint ventures, separate accounts, or real estate limited partnerships • Indirect ownership via real estate funds • Private REITs
Public	• MBS (residential and commercial) • Collateralized mortgage obligations • Mortgage REITs • ETFs that own securitized mortgage debt	• Shares in real estate operating and development corporations • Listed REIT shares • Mutual funds • Index funds • ETFs

Equity-based investments represent ownership of real estate properties. Ownership can be through sole ownership, joint ventures, real estate limited partnerships, etc. A variation of equity-based investments is leveraged ownership: Assume a building costs $10 million, and you put $3 million of your money and borrow $7 million. This is called leveraged ownership. That is, leveraged ownership is where a property is obtained through equity and mortgage financing.

If you are investing in a **debt-based** real estate investment, it means you are lending money to a purchaser of real estate. A classic example is a mortgage loan. This is considered a real estate investment because the value of the mortgage loan is related to the value of the underlying property.

There can be many variations within the basic forms:

- **Direct real estate investing**: Involves purchasing a property and originating debt

for one's own account. The major advantages are: control, and tax benefits. The major disadvantages are: extensive time and expertise required to manage the property, the large capital requirements, and highly concentrated portfolios.

- **Indirect real estate investing**: Pooled investment vehicles are used to access the underlying real estate assets. The vehicles can be public or private, such as limited partnerships, mutual funds, corporate shares, REITs, and ETFs.
- **Mortgages**: Represent passive investments in which the lender can expect to receive a predefined stream of payments over the life of the mortgage.
- **Private fund investing styles**: Most real estate private equity funds are structured as infinite-life open-end funds, which allow investors to contribute or redeem capital throughout the life of the fund.
- **REITs:** REITs combine the features of mutual funds and real estate. An REIT is a company that owns income-producing real estate assets. In REITs, average investors pool their capital to invest (take ownership) in several large-scale, diversified income-generating real estate properties. The REIT issues shares, where each share represents a percentage ownership in the underlying property. The income generated is paid as a dividend to the shareholders.

  The main advantage of the REIT structure is that it avoids double corporate taxation. Normal corporations pay taxes on income, and then the dividend paid from the after-tax earnings are taxed again at the shareholder's personal tax rate. REITs can avoid corporate income taxes by distributing 90% - 100% of their rental income as dividends.

  The value of the REIT shares is based on the dividend. REIT shares often trade publicly on exchanges. It is a way for individual investors to earn a share of the income from commercial properties (office buildings, warehouses, and shopping malls) without buying them. Risk and return of REITs vary based on the types of properties they invest in. Equity REITs invest primarily in residential and commercial properties.

7.3 Characteristics: Real Estate Investment Categories

Residential Property

- Properties such as residences, apartment buildings, and vacation homes, purchased with the intent to occupy.
- Most home buyers cannot fund the home entirely with cash. Instead, it is leveraged equity, i.e., they borrow money (loan/mortgage) to make the purchase.
- Most lenders require an equity contribution of at least 10% - 20% of the property purchase price.

Commercial Property

- Undertaken by investors (both institutional and HNIs) with limited liquidity needs and long time horizons.
- Primarily comprises office buildings purchased with the intent to rent.
- Direct investment: can be equity or debt financed.
- Debt financing: lender must ensure the borrower is credit worthy. The property must generate enough cash flows through rent to service the debt. How much loan the borrower can get (based on loan-to-value ratio) depends on the value of the property.
- Equity investing: Requires active and experienced management.

REITs

- Risk and return characteristics depend on the type of investments made.
- Mortgage REITs are similar to fixed-income investments.
- Equity REITs are similar to direct equity investments in leveraged real estate.

Mortgage-Backed Securities

- An MBS issuer forms a special purpose vehicle (SPV) to buy mortgages from lenders and uses them to create a diversified mortgage pool.
- Tranches of the SPV are sold to investors who receive the incoming steam of mortgage payments associated with their tranche.
- Different tranches have a different priority distribution ranking of incoming cash flows. Risk averse investors prefer the lowest-risk tranches, which are the first to receive interest and principal payments, but they also offer the lowest returns. Highest-risk tranches are the last to receive interest and principal payments, but they offer the highest return.

7.4 Risk and Return Characteristics

Real Estate Indexes

There are a number of indexes to measure real estate returns that vary based on the underlying constituents and longevity.

- REIT Index: It is constructed using the prices of publicly traded shares of REITs to construct the indices. The accuracy of the index depends on how frequently the shares of the index trade.
- Appraisal Based Index: Often actual transaction prices are not used by private real estate indexes because real estate assets do not transact very often and managers do not take the effort to revalue property. The drawbacks are: the appraisals are backward looking, they are subject to the biases of the appraisers, and they smooth-out volatility.
- Repeat Sales Index: These indexes are transaction based rather than appraisal based. Repeat sales of properties are used to construct the indices; i.e., the change in the

price of the same properties is measured in this method. These indexes suffer from sample selection bias because it is highly unlikely that the same properties come up for repeat sales every year.

Real Estate Investment Risks

Like any investment, real estate investing has its risks if the outcome does not turn out to be as per expectations.

- Property values are subject to variability based on national and global economic conditions, local real estate conditions (more supply than demand or demand more than supply), and interest rate levels.
- Ability to select, finance, and manage real estate properties. This includes collecting rent, maintenance, undertaking repairs on time, and finally disposing the property. Economic conditions may be different when the property was bought and when it is sold.
- Expenses may increase unexpectedly.
- Leverage magnifies risks to equity and debt investors.

7.5 Diversification Benefits

Many investors prefer real estate for its ability to provide high, steady current income. Real estate also has moderate correlation with other asset classes and thus provides some diversification benefits. However, there are periods when equity REIT correlations with other securities are high, and their correlations are highest during steep market downturns.

8. Infrastructure

8.1 Introduction and Overview

The assets underlying infrastructure investments are real, capital intensive, and long-lived. These assets are intended for public use, and they provide essential services e.g., airports, health care facilities, and power plants.

Infrastructure assets were primarily owned, financed, and operated by the government. Of late, they are financed privately with the intent of selling the newly built assets to the government. The provider of the assets and services has a competitive advantage as the barriers to entry are high due to high costs and regulation.

Investors invest in infrastructure assets because:

- The assets can generate stable long-term cash flows that adjust for economic growth and inflation.
- High levels of leverage can be used to acquire these assets which has a potential to enhance investor returns.
- The assets can help incorporate ESG criteria, e.g., investments in renewable energy sources.

8.2 Description

Categories of Infrastructure Investments

Infrastructure investments may be categorized based on: (1) underlying assets, (2) stage of development of the underlying assets, and (3) geographical location of the underlying assets. Let us look at the various sub-categories now.

Infrastructure investments based on underlying assets: They can be classified into economic and social infrastructure assets.

- Economic infrastructure assets: These include transportation, communication, and social utility assets that are needed to support economic activity. Examples of transportation assets are roads, airports, bridges, tunnels, ports, etc. Examples of utility assets are assets used to transmit and distribute gas, electricity, generate power, etc. Examples of communication assets are assets that are used to broadcast information.
- Social infrastructure assets: These are assets required for the benefit of the society such as educational and healthcare facilities.

Infrastructure investments based on the stage of development of the underlying assets: They can be classified into brownfield and greenfield investments.

- Brownfield investments: These are investments in existing investable infrastructure assets. These may be assets, with a financial and operating history, which the government wants to privatize.
- Greenfield investments: These are investments in yet-to-be-constructed infrastructure assets. The objective may be to construct and sell the assets to the government, or to hold and operate the assets.

Infrastructure assets may also be categorized based on their geographical location.

Forms of Infrastructure Investments

Investors may invest either directly or indirectly in infrastructure investments. The investment form affects the liquidity and the income and cash flows to the investor.

The advantages of investing directly in infrastructure are that investors have a control over the asset and can capture the full value of the asset. But the downside of a large investment is that it results in concentration and liquidity risks.

Most investors invest indirectly. Some forms of indirect investments include:

- investment in an infrastructure fund
- infrastructure ETFs
- shares of companies

Investing in publicly traded infrastructure companies offer the benefit of liquidity. Publicly traded infrastructure securities also have a reasonable fee structure, transparent governance, and provide the benefit of diversification. Master limited partnerships (MLPs)

are pass-through entities similar to REITs and are listed on exchanges.

8.3 Risk and Return Characteristics

Infrastructure investments with the lowest risk have stable cash flows and higher dividend payout ratios, but they also have lower expected returns and lesser growth opportunities. An example of a low-risk infrastructure investment is toll roads, or a brownfield investment in an asset leased to a government school. An example of a high-risk infrastructure investment is a fund with a greenfield investment.

Some of the risks associated with infrastructure investments include:

- Revenues being different than expected.
- Leverage creates financial, operational, and construction risk.
- Regulatory risk

8.4 Diversification Benefits

Some of the advantages to investors from investing in infrastructure are as follows:

- a steady income stream
- potential for capital appreciation
- diversification because of low correlation of infrastructure assets to traditional investments
- protection against inflation
- match the long-term liability structure of some investors such as pension funds

9. Issues in Performance Appraisal

9.1 Overview of Performance Appraisal for Alternative Investments

It can be difficult to conducting performance appraisal on alternative investments because these investments have the following characteristics:

- asymmetric risk–return profiles
- limited portfolio transparency
- illiquidity
- product complexity
- complex fee structures

9.2 Common Approaches to Performance Appraisal and Application Challenges

Traditional risk and return measures (such as the Sharpe ratio – measure of return per unit of risk) are not always appropriate for alternative investments because:

- Many alternative investments exhibit asymmetric risk and return profile, which means they might have high kurtosis (leptokurtic) and negative skewness. Downside risk measures such as VaR and Sortino ratio will underestimate the loss for a negatively skewed distribution.

- Alternative investments such as hedge funds and private equity have limited transparency. This is because the alternative investment industry is not as regulated as traditional investments.
- Most alternative investments are relatively illiquid.

Apart from the Sharpe ratio other metrics used to review the performance of alternative investments, include:

- Sortino ratio: measure of return relative to downside volatility
- Treynor ratio: measure of the excess average return of an investment relative to its beta to a relevant benchmark.
- Calmar ratio: average return relative to the worst drawdown loss (distance between a peak and a trough of a portfolio). It is typically calculated using the prior three years of data.
- MAR ratio: a variation of the Calmar ratio. Instead of just three years, it uses the full investment history and the average drawdown.
- Batting average: refers to the percentage of profitable trades.
- Slugging percentage: the magnitude of the gains from winning trades divided by the losses from losing trades

9.3 Private Equity and Real Estate Performance Evaluation

Private equity and real estate investments often display a J-curve effect – initial decline followed by strong growth over the long term.

The IRR calculation is frequently used to evaluate private equity investments. However, the determination of an IRR involves certain assumptions about a financing rate to use for outgoing cash flows (typically a weighted average cost of capital) and a reinvestment rate assumption to make on incoming cash flows (which must be assumed and may or may not actually be earned).

To overcome this complexity, the multiple of invested capital (MOIC), or money multiple is frequently used. It simply measures the total value of all distributions and residual asset values relative to an initial total investment.

The cap rate is often used to evaluate real estate investments. It is calculated as the annual rent actually being earned divided by the price originally paid for the property.

9.4 Hedge Funds: Leverage, Illiquidity, and Redemption Terms

Leverage

Hedge funds often use leverage to enhance returns. To lever their portfolio hedge funds use derivatives or borrow capital from prime brokers. Hedge funds have to deposit cash or other collateral into a margin account with the prime broker and the prime broker lends securities to the hedge fund. If the margin account falls below a certain level, a margin call is initiated

and the hedge fund has to put up more collateral. This can magnify the losses of a hedge fund because it may have to liquidate the losing position to meet the margin call.

Illiquidity and Potential Redemption Pressures

Hedge funds are valued on a daily, weekly, monthly, and/or quarterly basis. The value of a hedge fund depends on the value of underlying positions.

The price used for valuation depends on whether market prices are available and if the underlying position is liquid. When market prices are available, the fund decides what price to use. Common practice is to quote at $\frac{bid+ask}{2}$. A conservative approach is to use bid prices for long and ask prices for short.

GAAP accounting rules categorize hedge fund investments into three buckets:

- Level 1: An exchange-traded, publicly traded price is available and is used for valuation purposes.
- Level 2: When such price is not available, outside broker quotes are used.
- Level 3: When broker quotes are not available or are unreliable, as a final recourse, assets are valued using internal models.

Level 3 assets values require additional scrutiny from investors. The models used should be appropriate and consistent. The values obtained may not reflect true liquidation values. Also, the returns may be smoothed and the volatility understated.

Another factor that can magnify losses for hedge funds is redemption pressure. Redemptions usually occur when the hedge fund is performing poorly. Redemptions can force hedge fund managers to liquidate positions at disadvantageous prices.

To discourage redemptions:

- Hedge funds sometimes charge redemption fees to offset the transaction costs for the remaining investors.
- Hedge funds use notice periods which provide the hedge fund manager an opportunity to liquidate positions in an orderly manner.
- Hedge funds use lockup period (time periods when investors cannot withdraw their capital) which provide the hedge fund manager sufficient time to implement his investment strategy.

10. Calculating Fees and Returns

10.1 Alternative Asset Fee Structures and Terms

Example: Incentive Fees Relative to Waterfall Types

A PE fund invests $10 million in Portfolio company A and $12 million in portfolio company B. Company A generates a $6 million profit, but Company B generates a $7 million loss. The time period for the gain and loss are the same. The manager's carried interest incentive fee is 20% of profits. Calculate the incentive fee under:

1. A European-style waterfall whole-of funds approach
2. An American-style waterfall deal-by-deal basis (assuming no clawback)

Solution to 1:

Overall, the fund lost money (+$6 million - $7 million = -$1 million) so under a European-style whole-of-fund waterfall, the manger will not receive any incentive fee

Solution to 2:

Under an American-style waterfall, the GP could still earn 20% x $6 million = $1.2 million as incentive fees on the profitable Company A deal.

10.2 Custom Fee Arrangements

Hedge funds commonly use a "2 and 20" fee structure and fund of funds commonly use the "1 and 10" fee structure. However, many variations of the fee structure exist.

Analysts should be aware of any custom fee arrangements in place that will affect the calculation of fees and performance. These can include such arrangements such as:

- **Fees based on liquidity terms and asset size**: Hedge funds may provide a fee discount to investors who are willing to accept lower liquidity e.g., longer lockups. Similarly, hedge funds may provide a fee discount to larger investors. These terms are negotiated with individual investors via side letters, which are special amendments to the fund's LPA.
- **Founder's share**: To entice early participation in new hedge funds, managers often offer incentives known as founder's class shares. These shares have a lower fee structure e.g., "1.5 and 10" instead of "2 and 20" and are typically applicable to a certain cutoff threshold e.g., the first $100 million in assets.
- **Either/or fees**: A few large institutional investors have recently worked out a new fee model with some hedge fund managers. These managers agree either to charge a 1% management fee or to receive a 30% incentive fee above a mutually agreed-on hurdle rate, whichever is greater. The 1% management fee allows a fund to cover its expenses during down years and the 30% incentive fee incentivizes and rewards managers during up years.

Example: Fee and return calculations

Consider a hedge fund with an initial investment of 200 million; the fee structure is 2 and 20 and is based on year-end valuation. In year 1, the return is 30%.

1. What is the total fee if management fee and incentive fee are calculated independently? What is the investor's effective return?
2. What is the total fee if the incentive fee is calculated after deducting the management fee? Investor's net return?

3. If there is a hurdle rate of 5% and fees are based on returns of in excess of 5%, what is the total fee? What is the investor's net return?
4. In the second year, the fund declines to 220 million. Assume that management fee and incentive fee are calculated independently as indicated in Part 1, but now a high water mark is also used in fee calculations. What is the total fee? What is the investor's net return?
5. In the third year, the fund value increases to 256 million. What is the total fee and investor's net return?

Solution:

1. Initial investment grows to: 200 x 1.3 = $260 million.

Profit = $60 million.
Management fee: 0.02 x 260 = $5.2 million.
Incentive fee which is 20% of profit = 20% x 60 = $12 million.
Total fee = $5.2 million + $12 million = $17.2 million.
Investor's return = $\frac{260-17.2}{200} - 1 = 21.4\%$

2. Incentive fee after deducting management fee = 20% x (260 – 200 - 5.2) = 10.96.

Total fee = 5.2 + 10.96 = $16.16 million.
Investor's return = $\frac{260-16.16}{200} - 1 = 21.92\%$.
As you can see the return is better than Part 1 because incentive fee paid is relatively less here.

3. There is a hurdle rate of 5%. So, 200 x 0.05 = $10 million must be subtracted before incentive fees are paid.
Incentive fee = 0.2 x (260 – 200 - 5.2 - 10) = 8.96.
Total fee = 5.20 + 8.96 = $14.16 million.
Incentive fee is further reduced and the investor's return is enhanced.
Investor's return = $\frac{260-14.16}{200} - 1 = 22.92\%$.

4. Management fee = 0.02 x 220 = 4.4. To calculate the incentive fee, we need to determine whether the fund value has exceeded the high water mark. The high water mark was achieved at the end of Year 1. This value was 260 million – 17.2 million = 242.8 million. The incentive fee is 0 because the fund value is below the high water mark. Hence the total fee = $4.4 million.
Investor's return = $\frac{220-4.4}{242.8} - 1 = -11.2\%$

5. Management fee = 256 x .02 = 5.12. Since $256 has exceeded high water mark of 242.8 million, an incentive fee would be paid. Incentive fee = (256 - 242.8) x 0.2 = 2.64. Total fee = 5.12 + 2.64 = 7.76 million.
Investor's net return = $\frac{256-7.76}{215.6} - 1 = 15.14\%$.

Example: Hedge fund versus fund of funds

An investor is contemplating investing £200 million in either the Hedge Fund (HF) or the Fund of Funds (FOF). FOF has a "1 and 10" fee structure and invests 10% of its assets under management in HF. HF has a standard "2 and 20" fee structure with no hurdle rate. Management fees are calculated on an annual basis on assets under management at the beginning of the year. Management fees and incentive fees are calculated independently. HF has a 25% return for the year before management and incentive fees.

1. Calculate the return to the investor of investing directly in HF.
2. Calculate the return to the investor of investing in FOF. Assume that the other investments in the FOF portfolio generate the same return before management fees as HF and have the same fee structure as HF.

Solution to 1:

HF has a profit before fees on a £200 million investment of £50 million (= 200 million × 25%). The management fee is £4 million (= 200 million × 2%) and the incentive fee is £10 million (= 50 million × 20%). The return to investor is 18% (= (50 – 4 – 10) / 200).

Solution to 2:

FOF earns an 18% return or £36 million profit after fees on £200 million invested with hedge funds. FOF charges the investor a management fee of £2 million (= 200 million × 1%) and an incentive fee of £3.6 million (= 36 million × 10%). The return to the investor is 15.2% (= (36 – 2 -3.6) / 200).

10.3 Alignment of Interests and Survivorship Bias

Hedge fund index returns can be overstated due to survivorship, and backfill biases.

- Survivorship bias occurs when an index is composed of only surviving funds over a period of time, which tends to overstate the index returns.
- Backfill bias occurs when a new fund enters a database and historical returns of that fund are added (i.e., "backfilled"). Usually, funds that performed well are added which tends to overstate the index returns.

Example:

A PE fund makes two investments for $5 million each in Company A and Company B. One year later Company A returns a $8 million profit. But two years later Company B turns out to be a complete bust and is worth zero.

The GP's carried interest is 20% of aggregate profits and there is a clawback provision. How much carried interest will the GP receive in year 1 and year 2.

Solution:

In year 1, the GP will receive a carried interest of 20% of $8 million = $1.6 million. This amount would typically be held in an escrow account for the benefit of the GP but not

actually paid.

In year 2, the GP loses $5 million of the initial $8 million gain, so the aggregate profit is only $3 million. The carried interest payable is 20% x $3 million = $0.6 million. The GP has to return $1 million of the previously accrued incentive fee to the LPs because of the clawback provision.

Example

The hedge fund had an initial investment of $60 million. At the end of the first year, the value was 70 million after fees. At the end of the second year, the value was 80 million before fees. The fund has a 2 and 20 fee structure and incentive fees are calculated using a high water mark and a soft hurdle rate of 5%. Calculate the total fee paid for year 2.

Solution:

Management fee = 80 x .02 = 1.6 million

Incentive fee = (80 - 70) x .2 = 2 million

Total fee = 1.6 + 2 = 3.6 million

Summary

LO.a: Describe types and categories of alternative investments.

Traditional investments refer to long-only positions in stocks, bonds, and cash. All other investments are classified as alternative investments.

Alternative investments can be divided into five main categories:

- Hedge funds
- Private capital
- Natural resources
- Real estate
- Infrastructure

LO.b: Describe characteristics of direct investment, co-investment, and fund investment methods for alternative investments.

The three methods of investing in alternative investments are:

- Fund investing: The investor contributes capital to a fund, and the fund makes investments on the investors' behalf, e.g., investments in a PE fund.
- Co-investing: The investor can make investments alongside a fund, e.g., investments in a portfolio company of a fund.
- Direct investing: The investor makes a direct investment in a company or project without the use of an intermediary, e.g., direct investments in infrastructure or real estate assets.

LO.c: Describe investment and compensation structures commonly used in alternative investments.

The most common structure for many alternative investments is a partnership. It consists of two entities: General partner (GP) who is responsible for managing the fund and making investment decisions, and limited partners (LPs) who provide capital to the fund in return for a fractional partnership in the fund.

The general partner typically receives a management fee based on assets under management (commonly used for hedge funds)or committed capital (commonly used for private equity). Apart from the management fee, the GP also receives a performance fee (also called incentive fee or carried interest) based on realized profits.

LO.d: Explain investment characteristics of hedge funds.

Hedge funds are typically classified by strategy. These fall in four major categories: Event-driven, relative value, macro, and equity hedge.

A diversified portfolio of hedge funds is often referred to as a fund of funds. This instrument makes hedge funds accessible to smaller investors or to those who do not have the

resources, time, or expertise to choose among hedge fund managers

LO.e: Explain investment characteristics of private capital.

Private capital is a broad term for funding provided to companies that is not sourced from the public equity or debt markets. Capital that is provided in the form of equity investments is called private equity, whereas capital that is provided as a loan or other form of debt is called private debt.

Private equity means investing in private companies or public companies with the intent to take them private. The three main categories of private equity are: leveraged buyouts, venture capital, and growth capital. The main exit strategies are: trade sale, IPO, recapitalization, and secondary sale.

Private debt refers to various forms of debt provided by investors to private entities. Key private debt strategies include: direct lending, mezzanine debt, venture debt, and distressed debt.

LO.f: Explain investment characteristics of natural resources.

Natural resources include: commodities, farmland, and timberland.

Generally, commodity investments take place through derivative instruments, because of the high storage and transportation costs incurred when holding commodities physically.

The return on commodity investment is based mainly on price changes rather than an income stream such as dividends.

Timberland provides an income stream through the sale of trees, wood, and other timber products. Timberland can be thought of as both a factory and a warehouse. Additionally, since trees consume carbon as part of their life cycle, timberland considered a sustainable investment that mitigates climate-related risks.

Like timberland, farmland also provides an income component related to harvest quantities and agricultural commodity prices. However, it does not provide production flexibility, as farm products must be harvested when ripe.

LO.g: Explain investment characteristics of real estate.

Real estate has two major sectors: residential and commercial.

Investment characteristics of real estate are as follows:

- Indivisibility – requires large capital investments
- Illiquidity
- Unique characteristics (no two properties are identical).
- Fixed location.
- Requires professional operational management.
- Local markets can be very different from national or global markets.

Real estate investing can be categorized along two dimensions: public/private markets and debt/equity based.

LO.h: Explain investment characteristics of infrastructure.

The assets underlying infrastructure investments are real, capital intensive, and long-lived. These assets are intended for public use, and they provide essential services e.g., airports, health care facilities, and power plants.

Categories of infrastructure investments:

Based on underlying assets they can be classified into:

- Economic infrastructure assets: These include transportation, communication, and social utility assets that are needed to support economic activity.
- Social infrastructure assets: These are assets required for the benefit of the society such as educational and healthcare facilities.

Based on the stage of development of the underlying assets they can be classified into:

- Brownfield investments: These are investments in existing investable infrastructure assets.
- Greenfield investments: These are investments in yet-to-be-constructed infrastructure assets.

LO.i: Describe issues in performance appraisal of alternative investments.

Traditional risk and return measures (such as the Sharpe ratio) are not always appropriate for alternative investments.

Many metrics are used to evaluate the performance of alternative investments such as: the Sharpe ratio, Sortino ratio, Treynor ratio, Calmar ratio, MAR ratio, batting average, and slugging performance.

The IRR calculation is frequently used to evaluate private equity investments, and the cap rate is frequently used to evaluate real estate investments.

Leverage, illiquidity and redemption pressure pose special challenges while evaluating hedge funds' performance.

LO.j: Calculate and interpret returns of alternative.

Analysts should be aware of any custom fee arrangements in place that will affect the calculation of fees and performance. These can include such arrangements such as: fees based on liquidity terms and asset size, founder's share, and either/or fees.

Hedge fund index returns can be overstated due to survivorship, and backfill biases.

