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Alternative Investments
CFA一级知识框架图

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Module 3-7

ALTERNATIVE INVESTMENTS CATEGORIES

Private Capital

Private Equity

Private Equity vs. Public Equity	*Direct ownership and control*	• Have ***voting rights*** in electing the board, setting strategy, and making impactful decisions.
	Direct and proportional claim to residual cash flow	• Private equity ownership allows ***more direct control*** over decisions. • Private equity requires ***specialized knowledge***.
	Historically higher returns and greater risk	• The potential payoff is ***unlimited upside*** with the ***downside limited*** to the amount invested.

Private Equity Strategies

Leveraged buyouts (LBOs)	• *LBOs*: acquire ***public*** or ***established private companies*** with significant ***debt***.
	    • Targets ***mature***, ***underperforming*** public companies.
	    • LBO managers seek to add value by ***improving company operations.***
	    • If debt financing is ***unavailable*** or ***costly***, LBOs are ***less likely*** to happen.
	• *Management buyouts (MBOs):* ***current management*** team is involved.
	• *Management buy-ins (MBIs):* current management team is being ***replaced*** and the acquiring team will be involved in managing the company.

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Venture capital (VC)	• Investing in ***start-ups*** companies with ***high growth*** potential.
	  • ***Higher expected returns*** because of the risk.
	  • Venture capitalists are ***actively*** involved managing invested companies.
	  • Equity interest + some ***debt invest*** (***convertible debt***).
	  • The portfolio company's management team is ***competent***.
	• Compared to LBOs, accurate valuation is ***difficult*** with high ***uncertainty.***

Growth Capital	• The firm takes a ***minority interest*** in more mature companies.
	• Focuses on more ***established businesses.***
	• Management of the invested company is interested in ***realizing some earnings before IPO*** but still seeks to ***retain control.***
	• **Private investment in public equity (PIPE)**: invest either newly issued common stock or shares sold by existing stockholders or a combination of both at a ***fixed discount price.***
	  • Often occurs in ***work-out*** or ***rescue situations.***
	  • ***Fewer disclosures*** to raise capital ***more quickly*** and ***cost effective.***
	  • Sometimes through ***convertible debt*** or ***convertible preferred stock.***
	  • Have ***dilutive effect*** and ***incentive conflicts.***

The stage of venture capital investing	**Angel investing (Pre-seed capital)**	• At the ***idea stage***, transform the idea into a business plan. • Often provided by ***individuals rather than VC funds.***
	Seed stage	• Support product development and market research. • The ***first stage*** at which ***VC funds invest***. • Convertible preferred shares are often used for ***additional protections*** the event of a liquidation.
	Early stage (Start-up stage)	• Moving toward operation but have ***not yet*** started commercial production or ***sales***.
	Later stage (expansion VC)	• After commercial production and ***sales have begun*** but ***before any IPO***. • To support initial growth, a major expansion, product improvements, or a major marketing campaign. • Management selling control to VC investor. • Through ***equity and debt***, may also use ***convertible bonds or convertible preferred shares***. • Debt financing affords ***more protection*** in a ***bankruptcy*** situation.
	Mezzanine stage	• Prepare to ***go public***. • Bridge financing until it can complete an IPO. • ***Mezzanine financing*** uses equity–debt hybrid instruments • ***Mezzanine-stage financing*** using ***equity-like*** or ***short-term debt***.

Private Equity Exit Strategies

	Advantages	Disadvantages
IPO	• Potential for the ***highest price***; • Management ***approval***; • Future ***upside potential;*** • Increase company visibility; • Management will be retained.	• High transaction ***costs***; • Long lead ***times***; • Risk of stock market ***volatility***; • High ***disclosure*** requirements; • Potential ***lock-up period***; • appropriate only for ***larger and fast-growing companies.***
Direct Listing	• Less complexity; • Less transaction cost.	
SPAC	• ***Extended time*** for disclosure; • ***Fixed valuation;*** • ***Flexibility of transaction structure;*** • Potentially ***high-profile and seasoned*** sponsors and their extensive investor network.	• Potential ***higher costs*** of capital from sponsor dilution; • ***Valuation spread*** between the announced and true equity value; • ***Specific deal and capital risk*** due to definite purchase and merger agreement; • ***More stringent standards*** on their operations; • ***Stockholder overhang***: the downward pressure on the share price as large blocks of shares are being sold.

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	Advantages	Disadvantages
Trade Sale	• ***Immediate cash*** exit; • ***Higher price*** from synergy-seeking strategic buyers; • ***Fast*** and ***simple*** execution; • ***Lower*** transaction ***costs*** than IPO; • ***Lower*** levels of ***disclosure***; • ***Higher confidentiality.***	• Possible ***opposition*** by ***management***; • Lower attractiveness to ***employees*** of the portfolio company than IPO; • ***Limited*** number of potential trade buyers.
Secondary Sale	• Sale of the portfolio company to ***another private equity*** firm.	
Recapitalization	• A firm ***increase leverage*** to ***pay*** itself ***dividend;*** • ***Not a true exit strategy.***	
Liquidation	• When a transaction has not gone well, ***liquidate*** the investment to move on to other projects.	

Private Debt Categories

Venture Debt	• Provided to ***start-up*** or ***early-stage*** companies with ***little or no cash*** flow. • ***Similar*** to ***mezzanine debt, rights to purchase equity***: compensate the lender for the ***increased risk of default*** • ***Complement*** existing equity ***financing***, allowing shareholders to ***maintain control.***

Direct Lending	• Providing capital directly to ***borrowers*** to receive ***interest***, the original ***principal*** and possibly other payments.
	• Establish funds with ***money raised*** from investors looking for ***higher-yielding debt.***
	    • Provided by a ***small number of investors.***
	    • ***Different from traditional*** bonds.
	• ***Leveraged loan***: private debt firms will ***borrow money*** to ***finance the debt*** that the firm lend to other borrowers.

Mezzanine Debt	• ***Subordinated*** to ***senior*** debt, but is ***senior*** to ***equity.***
	    • ***Riskier*** than senior secured debt, and requires ***higher interest rates.***
	    • ***Additional*** features: such as ***warrants*** or ***conversion rights*** of ***options*** for equity.

Distressed Debt	• Buying the debt of ***mature companies*** with ***financial difficulty.*** • ***Expect*** both the company and its debt ***increasing*** in value. • Price at the ***expected recovery rate.*** • Specialized knowledge related to assessing the ***likelihood of default*** and the ***possible recovery rates.*** • Benefit from investors with ***capital restructuring skills.*** • Debtor-in-possession (DIP) financing: provides operating funds for firms ***already in bankruptcy.***
Other private debt strategies	• ***Unitranche debt***: combines different tranches of secured and unsecured debt into a ***single loan.*** • ***Specialty loans:*** where debt is extended to niche borrowers (***litigation finance***).

Risk/Return & Diversification of PE

Risk/Return of Private Equity	• ***Higher-return*** opportunities.
	  • Invest in ***private*** companies(***illiquidity risk***).
	  • ***Influence*** on portfolio companies' management and operations.
	  • Use of leverage(***leverage risk***).
	• *Better returns* combined with *higher risks* compared to traditional investments.

Indexes	• Published private equity indexes may be an ***unreliable*** measure of performance.
	  • Rely on ***self-reporting*** and are subject to ***survivorship***, ***backfill***, ***overstate returns.***
	  • ***Understatement*** of ***volatility*** and ***correlations*** with other investments.

Diversification	• ***Moderate diversification*** benefit to traditional investments. • Private equity investments may offer ***vintage diversification.***

Performance Evaluation Issue of Private Capital

J-curve effect of Cash Flow

- **Capital commitment**
  - Returns are usually ***negative***
  - ***little or no income***
- **Capital deployment**
  - ***Deploy funds***
  - ***Negative*** cash flow
- **Capital distribution**
  - Fund ***returns to accelerate***
  - Fund may realize substantial capital gains from ***liquidating or exiting*** its investment.

The best way is IRR

- Considers the ***timing*** of the respective ***cash flows***
- ***Complexity***

Multiple of invested capital (MOIC) is often used

- ***Ignores*** the ***timing*** of cash flows, easier to ***calculate***, easier to ***understand***
- MOIC = (***Realized value*** of investment + ***Unrealized value*** of investment)/(Total amount of ***invested capital***)

Performance and risk may not be appropriate

- ***Greater risk*** investing in a start-up carries.
- ***Unlikely*** to offer ***positive*** return over longer time horizons.
- Performance risk ***cannot*** easily be ***hedged away.***

Vintage year

- Performance is greatly determined by the year the fund started and the phase of the business cycle in which the vintage year occurred.

Risk/Return & Diversification of PD

Risk/Return of Private Debt	• Provide ***higher-yielding*** opportunities.
	    • Could ***realize higher returns*** from the ***illiquidity premium*** and ***market inefficiency.***
	    • ***Higher levels of risk*** than traditional bonds.
	    • ***Vary*** in risk and return.
	• Risk level:
	    • Infrastructure Debt<Senior Real Estate Debt<Senior Direct Lending<Unitranche Debt <Debt Mezzanine<Private Equity/Co-Investments

Diversification	• ***Moderate diversification benefit to traditional investments.***

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Real Estate

Characteristics

Characteristics	• *large* capital investment; • *Illiquidity;* • *Unique: no* two properties are *identical* ; • *Multiple types;* • *Diversification* benefits; • Private market *indexes* are *not directly investable.*
Key reasons for investing in real estate	• *Long-term total returns: income* generation and *capital appreciation*. • *Fixed rents* provides *stable income* over many economic cycles. • Historically *low correlations* with other asset classes.
Price discovery process is opaque	• Historical prices may *not* reflect prevailing market conditions. • Transaction costs are typically *high.* • Transaction activity may be *limited* due to either supply or demand conditions.

Investment Categories	• **Residential real estate**
	    • Owner-occupied, single residence.
	• **Commercial real estate**
	    • Residential properties owned for lease or rental;
	    • Office, retail, industrial, ware-house, hospitality, and mixed-use properties.

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Forms of Real Estate Investment

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

Direct Investing	***Forms***	• ***Manage*** all on their own; • Hire ***advisers*** to manage in a separate account; • Form ***joint ventures*** with other investors; • To invest in ***pooled investment vehicles.***
	Advantages	• ***Control***: owner can make all the decisions; • ***Tax***: depreciation expenses and interest expense can reduce income tax bills; • ***Diversification***: low correlation with other asset classes.
	Disadvantages	• ***Complexity***: need to dedicate time to manage the property; • ***Need for specialized knowledge;*** • ***Significant capital needs***: large initial capital outlay; • ***Concentration risk***: cannot create a well-diversified real estate portfolio; • ***Lack of liquidity***: difficult to quickly buy or sell and high transaction costs; • ***Debt closing costs***: incurred when owners take out loans to fund investments.
Indirect Investing (REITs)	***Categories of REITs***	• ***Equity REITs:*** invest in properties to ***maximize cash income and dividends***. • ***Mortgage REITs:*** underwrite ***loans*** to real estate (mortgages) or invest in ***MBS.*** • ***Hybrid REITs:*** invest in both these types.
	Advantages	• ***Elimination of double corporate taxation;*** • Greater ***liquidity***, ***lower trading costs***, and ***better transparency;*** • ***Not forced to sell the company's underlying*** when there are mass ***redemptions;*** • Have the ***know-how to manage*** the properties in order ***to align the interests***.
	Disadvantages	• ***Higher correlation*** with the public equity markets.

Investing Style

Core real estate strategies	• Structured as ***infinite-life open-end funds.***
	  • Exposure ***well-leased***, high-quality institutional real estate (***core real estate***).
	  • ***Stable return*** primarily from ***income*** of the property.

Opportunistic real estate strategies	• Structured as ***finite-life closed-end funds***, which accept ***additional risks*** in order to have ***higher return.***
	  • ***Core-plus strategies:*** require ***modest*** redevelopment or upgrades to lease any vacant space together with possible alternatives.
	  • ***Value-add strategies: higher return*** from ***larger-scale*** redevelopment and repositioning of existing assets.
	  • ***The most opportunistic real estate strategies: major*** redevelopment, repurposing of assets, taking on ***large*** vacancies, or speculating on ***significant improvement*** in market conditions.

Risk/Return & Diversification

Source of return	• **Income:** generates income primarily from the collection of ***rental or lease payments*** (***Bond-like***)
	    • Expenses include direct and indirect ***management expenses.***
	    • Mostly ***low-risk direct*** investment.
	    • More ***consistent.***
	• **Asset appreciation:** expect the exit price will ***exceed*** the aggregate investment (***Equity-like***)
	    • ***Longer-term*** investment.
	• **Combination of Income and asset appreciation.**

Loan to Value ratio	• ***Leverage magnifies*** gains and losses, and increases the risks to both equity and debt investors.
	    • ***Loan to value ratio(LTV)*** = Mortgage liability/Portfolio value
	    • As the ***loan-to-value ratio increases*** and ***interest coverage weakens***, the probability of ***default increases.***

Diversification Benefits	• Offers ***diversification benefits*** to portfolios: ***low correlations*** with traditional asset classes. • During ***steep market downturns***, equity REIT ***correlations*** with market benchmarks ***increase.***

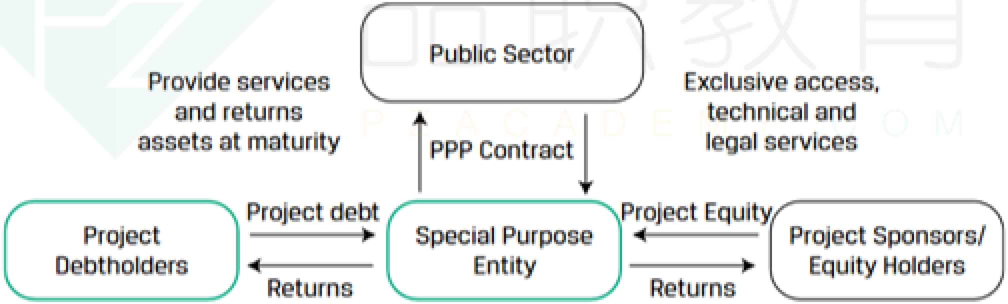
Infrastructure

<table>
<tr><td>Source of Cash Flow</td><td>

Availability payments: payments are received to make the facility available.
Usage-based payments: such as tolls and fees for using the facilities.
“Take-or-pay” arrangements: obligate buyers to pay a minimum purchase price to sellers for a pre-agreed volume.

</td></tr>
<tr><td>Public–private partnership (PPP)</td><td>

A long-term contractual relationship between the public and private sectors.



</td></tr>
<tr><td>Special purpose entity</td><td>

Raises borrowed and ownership capital for the construction and operation of a specific road, bridge, or other long-lived asset under the terms of a concession agreement, after which the asset is sold or returned to a public sector entity.

</td></tr>
</table>

Categories	**Based on the underlying assets**	• ***Economic infrastructure***: support economic activity.
		    • ***Transportation*** assets, ***information*** and communication technology (ICT) assets, ***utility*** and ***energy*** assets.
		• ***Social infrastructure***: toward human activities.
		    • ***Educational***, ***health care***, ***social housing***, and correctional facilities.

	Based on underlying asset's stage of development	• ***Greenfield***: developing ***new assets*** and ***new infrastructure***, are ***opportunistic*** investments. • ***Brownfield***: investing in ***existing assets***, with ***available*** historical financials, ***predictable*** cash flow. • **Secondary-stage investments**: investing in ***existing*** infrastructure facilities or ***fully operational*** assets that ***do not require*** further investment or development.
Forms of Investment	• ***Direct***: ***control***, capture ***full value*** → ***large investment***, high ***concentration*** and liquidity risk • ***Indirect: liquidity***, ***transparent*** governance → ***little control***, ***e.g. MLPs*** • ***MLP:*** master limited partnerships, trade on ***exchanges***, distribute most free cash flow to investors, very ***similar with REITs***.	

Risk/Return & Diversification

Risk	• The ***type*** of infrastructure investment is material in determining the risk and return. • Social services infrastructure < Regulated industry < Demand-based infrastructure. • ***Developing market*** economies, both risks and returns are ***considerable***.
Return	• Most infrastructure funds gravitate toward *the medium- and low-risk profiles.* • Less liquid forms of direct equity ownership investments tend to offer the ***highest expected return with the greatest risk.*** • Publicly traded forms of debt offer *the lowest* potential returns. • Assets backed by stable long-term concession arrangements provide *the most stable* returns.

Diversification Benefits	• Make addition of an ***income stream.***
	    • Further portfolio ***diversification***: low correlation with existing investments.
	    • For some ***protection against inflation.***
	• Infrastructure debt tends to have ***lower default rates*** and ***higher recovery*** , ***less subject to fluctuation*** over the economic cycle.
	• Better ***match the longer-term liability*** structure and ***sovereign wealth funds*** make the ***largest*** allocation.

Natural Resources

Commodities

<table>
<tr><td>Features</td><td>
Do not generate cash flows but usually incur costs;
Benefit from commodity price appreciation;
Governments take an increasingly important role ;
Environmental factors play a direct role;
Involve direct or indirect claims to physical assets themselves.
</td></tr>
<tr><td>Categories</td><td>
Commodity sectors include precious and base metals, energy products, and agricultural products.
</td></tr>
<tr><td>Investment Vehicles</td><td>
Most using commodity derivatives.

Holding the physical products incurs tax obligations and costs from storage, insurance, brokerage, and transportation.
Derivatives are liquid and provide opportunities for price discovery.

Exchange-traded products (ETP)

Suitable for investors who restricted to equity shares and seeking the simplicity of trading through a standard brokerage account.
Charge fees that are included in their expense ratios.
May use leverage and replicate the pay-offs from a long or short position.

</td></tr>
</table>

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Investment Vehicles	• **Managed Futures (CTAs)**
	  • Invest in ***a variety of*** futures.
	  • Make ***directional*** investments based on technical and fundamental strategies.
	  • ***Separately managed accounts (SMA)*** may be used .
	• **Specialized funds investing in specific commodity sectors**
	  • Exposure to the ***specific commodity sectors.***

The price of futures contract	• ***Futures price ≈ spot price(1+r) + storage costs – convenience yield***
	  • ***Convenience yield: non-cash*** benefits from holding the physical commodity.
	  • ***Cost of carry:*** costs of transportation, storage, and insurance for physical commodities.
	• ***Contango: upward sloping***
	  • Futures price **>** Spot price
	  • When there is ***little convenience yield, lowers the return*** of ***long-only*** investor.
	• ***Backwardation: downward sloping***
	  • Futures price **<** Spot price
	  • When the ***convenience yield is high***, ***enhances the return*** of ***long-only*** investor.
	  • The benefit of holding the commodity outright exceeds the cost of carry.
	  • Investors prefer to ***hold the physical commodity*** over derivative contract.

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Risk/Return & Diversification

Supply and Demand	• Physical commodity supply are determined by ***production, seasonal crop yields, inventory levels*** in the short term and secondarily by the ***actions of non-hedging investors.***
	• Supply adjust ***more slowly*** than demand.
	    • Extended ***lead times*** are often needed to affect production levels.
	    • The ***weather*** will significantly affect output.
	    • Building the necessary infrastructure may ***take many years.***
	• ***Mismatch*** of supply and demand may lead to ***price volatility***.

Risk and Return	• Commodity futures contracts may offer a ***liquidity premium*** or other ***trading opportunities***, creating the prospect for a ***positive real return***.
	• The volatility of commodity prices is ***much higher*** than reported consumer inflation.
	    • Consumer inflation change ***more slowly*** than commodity prices.
	    • Inflation calculations use statistical ***smoothing*** techniques and ***behavioral assumptions.***
	    • ***Inflation hedge: higher correlation*** between commodities and inflation.
	        • ***Greater returns*** in rising inflation;
	        • ***Negative returns*** as inflation rates decline;
	        • ***Low but positive returns*** in stable inflation.

Diversification Benefits	• ***Effective*** portfolio ***diversification***, as commodity returns have historically had a ***low correlation*** with other investment returns.

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Land Investment

<table>
<tr><td rowspan="3">Land Investment</td><td colspan="3">

- **Developed land:** ***steady*** cash flow streams.
- **Less developed land:** sources of return include expected ***price appreciation*** over time and cash flows from ***lease*** and ***sale of products.***
- ***Pricing is infrequent and rely on imprecise estimates.***
- Illiquid assets that have *a limited number* of potential buyers and sellers due to the specialized knowledge and capital needed.

</td></tr>
<tr><td rowspan="2">Land Investment vs Real Estate</td><td>• Similarity</td><td>• Unique, illiquid assets with distinct geographic location and features.</td></tr>
<tr><td>• Difference</td><td>• Physical improvements;
• Value;
• Location;
• Financing alternatives.</td></tr>
</table>

Timberland and Farmland

<table>
<tr><td rowspan="2">Characteristics</td><td>Timberland</td><td>• Long market cycle;
• Serves as both a factory and a warehouse;
• Flexibility of harvesting.</td></tr>
<tr><td>Farmland</td><td>• Cultivation of livestock and agricultural land investing;
• Little flexibility in production;
• Highly sensitive to unexpected weather changes and climate developments.</td></tr>
<tr><td>Investment Type</td><td colspan="2">• Direct ownership: Investors are pension funds, foundations, and endowments who seek for long-term and tax-exempt investment.
• Indirect ownership: Small investors invest in investment funds.
    • Involve separately managed accounts.
    • Have operating risk.
• Timberland investment management organizations(TIMOs): entities that support institutional investors by managing their investments in timberland.</td></tr>
</table>

Risk/Return & Diversification

Return and risk	• ***Farmland*** had the highest annualized ***return.***
	• ***Timber*** had the ***highest*** standard ***deviation.***
	• ***Liquidity*** is ***very low*** and the ***risk of negative cash flow high.***
	• ***Primary risk***:
	    • ***Weather risk*** as a unique and more exogenous;
	    • ***International competitive landscape.***
	• Vacant or raw land investment have ***greater risk.***

Diversification Benefits	• Timber and farmland exhibited ***low correlation*** with traditional assets. • Timberland shows the ***lowest*** correlation. • ***Inflation hedge*** from holding land.

Hedge Funds

Introduction

Characteristics	• ***Fee structure***: ***management*** fees + ***incentive*** fee (***2 and 20***); • ***Actively*** managed, less legal and regulatory constraints; • ***Flexible mandates*** permitting the use of shorting and derivatives; • A ***larger*** investment universe to focus on; • ***Aggressive*** investment styles: Aims to generate ***high returns with few*** investment ***restrictions;*** • Relatively liberal use of ***leverage;*** • ***Leveraged:*** taking both ***long*** and ***short*** positions, and often uses ***derivatives;*** • Open to a ***limited*** number of investors with a ***substantive*** initial investment; • ***Restrictions on redemptions:*** allow HF managers more ***flexibility;*** • ***Diversification Benefits***: hedge funds can achieve better ***diversification***.

Hedge Funds vs. Mutual Funds

		Hedge Funds	Mutual Funds
Similarities	• Invest clients' money to achieve a better risk/reward profile		
Differences	***Clients***	• Institutional and accredited investors	• Public investor
	Regulation	• Less regulated	• Highly regulated
	Fee structure	• Performance-based fee	• Fixed compensation
	Self investment	• Require the managers to invest own money in the hedge fund	• Not necessarily to invest in the funds
	Exposure	• Long and short position	• Long-only
	Leverage	• Often used	• Barely used

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Hedge Funds vs. Private Equity

		Hedge Funds	Private Equity
Similarities	• *Incorporated and organized as private limited partnerships or limited liability companies*		
Differences	***Assets***	• More liquid	• Less liquid
	Time Horizon	• Short	• Long
	Management Fee	• Based on AUM	• Based on committed capital
	Funds Time	• At the start of the investment	• Committed at the start and funded over time, upon demand
	Investment Style	• *Transaction oriented* • *Offsetting trades*	• Stable long-term investment in few companies
	Leverage	• Often used	• Barely used

Investment Form

Direct	• **Master feeder structure**
	  • Optimum ***tax efficiency, offshore*** feeder fund + ***onshore*** feeder fund.
	• **Separately managed account**： ***Larger*** investors that remains ***more influence***
	  • *Advantages:* customizable portfolio, better transparency, efficient capital allocation, higher liquidation.
	  • *Disadvantages:* more complex, interest conflicts (incentive fees).

Indirect	• **Funds of hedge funds:** ***smaller*** investors who may lack of specialized skill.
	  • *Advantages:* lower investment minimums, reduced lockup periods, better redemption or fee terms, expertise in conducting DD.
	  • *Disadvantages:* higher fee structure (fee layering), weaker performance due to greater liquidity.
	• **Hedge fund replication ETFs**
	  • Generate returns which are ***high correlated*** with actual hedge fund returns.
	  • Invest in ***public-traded*** instruments relying on ***quantitative tools.***
	  • *Advantages:* greater liquidity, lower fees, increased transparency , reduce exposures to traditional sources of risk.
	  • *Disadvantages:* more regulated, cannot use leverage.

Hedge Fund Strategies

Equity hedge strategies (Most use ***bottom-up approach***)	***Market Neutral***	• Use ***quantitative, technical*** and ***fundamental*** analysis. • ***Long undervalued*** and ***short overvalued***. • ***Neutral with market risk (beta=0)***. • Aims to profit from ***individual securities movements*** while hedging ***market risk.*** • May use ***leverage*** to amplify the returns. • The ***lowest positive*** correlation with the market index.
	Fundamental L/S	• Long securities who are ***underestimated/undervalued*** or have a potential for growth. • Shorts ***stocks or an index*** to reduce the risk. • To obtain ***alpha.*** • Maintains a ***net long exposure*** but may adjust the amount of net market risk.
	Fundamental Growth	• Long ***high growth and capital appreciation company***. • Short ***low or negative growth*** and suffer ***capital depreciation.*** • Tend to end up ***long biased*** overall. • May ***not be market neutral*** and returns may exhibit a ***non-zero beta.***

Equity hedge strategies (Most use ***bottom-up approach***)	***Fundamental value***	• ***Long undervalued and unloved*** companies. • Tend to be ***long biased.*** • Capture expected ***future*** stock price rises. • Performance drives from the ***spread*** between value and growth expectations. • Exhibited ***high correlation*** with the market index.
	Short Biased	• Use ***quantitative , technical*** and ***fundamental*** analysis to focus on ***shorting overvalued*** equity. • Tend to be ***contrarian*** by nature. • ***Useful additions*** to larger portfolios during ***market stress.*** • With ***limited or no*** long-side exposure. • ***Negatively*** correlated with the market index in short time.
Event-driven strategies (***bottom-up approach***)	***Merger arbitrage***	• ***long*** the ***target*** company, and ***short*** the ***acquiring*** company. • Expect risk and return stems from the ***modest spread in prices.*** • ***Primary risk***: the announced deal ***fails*** and the deal ***spread re-widens***. • ***Shorting the acquirer*** to express the risk that the acquirer has ***overpaid for the acquisition.*** • Leverage is regularly used to ***amplify returns*** but also ***increases losses.***

Event-driven strategies (bottom-up approach)	Distressed/restructuring	• Purchasing fixed-income securities that are senior enough in a bankruptcy situation. • Purchase the fulcrum debt to convert into new equity in restructuring.
	Special situations	• Focus on events other than M&A and bankruptcy.
	Activist shareholder	• Purchase sufficient equity to influence a company's policies.
Relative Value Strategies	Convertible bond arbitrage	• Buying convertible debt and selling the same issuer's common stock. • Residual bankruptcy risks can be further hedged using equity put options or credit default swap derivative.

	Fixed-income	• Fixed-income general: focus on the relative value within fixed income markets.
		    • Spread and currency dynamics together with considerations around the shape of government yield-curve drive investment choices and returns.
		• Fixed Income (other): Exploit relative value among various MBS and ABS.
		    • Focus on the relative value of various higher-yielding securities.
		    • Generate an attractive and highly secured coupon return and to exploit relative security and quality mispricing.

	Multi-Strategy	• Looks for investment opportunities wherever they might exist.

Opportunistic strategies (Focus on ***macro events*** and ***commodity*** trading)	**Macro strategies**	• ***Top Down*** approach to identify economic ***trends.*** • Profit from ***overall market direction.*** • Trade opportunistically in the ***fixed income, equity, currency, and commodity.*** • Benefit most from periods of ***higher volatility.***
	Managed futures fund (CTA)	• ***Actively*** managed ***directional investments*** primarily in the futures markets. • Use ***models*** that measure ***trends*** and ***momentum*** over different time horizons. • ***Useful*** for portfolio ***diversification***, particularly in times of ***strong trending*** market conditions and especially during ***market stress.*** • ***Mean-reverting*** markets can lead to ***uncomfortable*** investment outcome. • Commodity-focused managed futures funds have a ***constant price tension*** between suppliers and consumers. • ***Minimize the leverage*** obtained by borrowing or shorting.

Risk/Return & Diversification

Three distinct sources of return	• ***Market beta:*** can be realized using ***market index–based*** funds/ETFs; • ***Strategy beta:*** attributed to the ***investment strategy*** of the hedge fund; • ***Alpha:*** the ***manager-specific*** returns, due to the selection of specific positions.
Hedge Funds Indexes	• ***Selection bias:*** Only those funds who have ***good performance*** will be reported. • ***Survivorship bias:*** The inclusion of ***only current investment*** funds. • ***Backfill bias:*** Certain surviving hedge funds may be added to hedge fund indexes only after they are ***initially successful*** and ***start to report their returns.*** • ***Self-reporting bias:*** The index data based on information ***reported by HF managers.*** • ***Fund-of-funds composite indexes*** can minimize return distortions.

Performance Evaluation	• ***Examining the relationship between returns and the standard deviation of returns.***
	  ◦ Many hedge fund strategies have ***widely*** varying risk/return characteristics.
	• ***The risk/return trade-off measured by the coefficient of variation of annual returns.***
	  ◦ A ***higher coefficient*** of variation provides ***greater return*** for the same amount of risk.

Diversification Benefits	• ***Low correlation*** with traditional asset classes. • Enhancing portfolio ***diversification*** and ***risk-adjusted return.***

Magnify Losses Of Hedge Fund

Leverage: Using leverage to seek higher returns but may magnify gain / losses

- ***Margin requirement***
  - depends on the riskiness of investment and creditworthiness of hedge fund.
- ***Margin call*** will ***amplify losses***
  - If the margin account or the hedge fund's equity in a position declines below a certain level, the lender initiates a margin call and requests that the hedge fund ***put up more collateral***.
- **leveraged rate of return**
  - r_L = Leveraged portfolio return/Cash position = $[r \times (V_c + V_b) - (V_b \times r_b)]/V_c = r + V_b/V_c(r - r_b)$

Redemptions: Redemptions magnify losses for hedge funds

- Redemption occurs when a hedge fund is ***performing poorly***.
  - Investors may require ***liquidation*** of their positions at disadvantageous prices that ***magnify*** the losses.
- Ways to prevent redemptions: ***Redemption fees***, ***Notice periods***, ***Lockup periods, Soft lockup, Gate***.
  - ***Investing in FOFs***: more redemption flexibility

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Digital Assets

Introduction

Definition	• A new investment class that can be ***created, stored, and transmitted electronically and have associated ownership or use rights.***
Characteristics	• Investment ***diversification;*** • Expected return: ***higher than traditional investment;*** • ***Higher risks.***

Distributed Ledger Technology	• Distributed ledger technology (DLT) represents a technological development and offers potential improvements to delivering financing services and financial record keeping.
	• **Basic elements**: a digital ledger, a consensus mechanism, a participant network.
	    • ***Distributed Ledger***: a type of ***database*** that can be shared among potentially ***infinite numbers*** of entities in a network
	    • ***Consensus mechanism*** :The process by which the computer entities (or nodes) in a network agree on a ***common state*** of the ledger.
	• Use of ***cryptography*** to make sure a high level of network ***security*** and database ***integrity.***
	• **"Smart contracts"**: computer programs that ***self-execute*** on the basis of ***pre-specified terms and conditions*** agreed to by the parties to a contract

Distributed Ledger Technology	• **Advantage:**
	  • Greater ***accuracy, transparency,*** and ***security*** in record keeping;
	  • ***Faster transfer*** of ownership;
	  • ***Faster transfer*** of P2P interactions.
	• **Disadvantages:**
	  • The DLT is not ***fully secure;***
	  • ***Breaches*** in privacy and data protection ***are possible;***
	  • The computational processes require ***massive amounts of energy to verify transaction activity.***

Blockchain	• A type of ***digital ledger*** in which information is recorded sequentially within blocks that are then linked or "chained" together and secured using cryptographic methods. • Each block contains *a* ***grouping of transactions*** (or entries) and ***a secure link*** (known as a hash) to the previous block. • ***New transactions*** are inserted into the chain only ***after validation via a consensus mechanism.***
Consensus Protocol	• A set of ***rules*** governing how blocks can join the chain and become the immutable ***"truth."*** • Designed to ***resist*** attempts at ***malicious manipulation*** up to a certain level of security. • The validation of the transactions comes with rewards: ***mining.***

<table>
<tr>
<td>Consensus Protocol</td>
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Two type of consensus protocol:

The Proof of Work (PoW) Protocol: determines which specific block to add through a computationally costly lottery.

Difficult and expensive to manipulate historical data.
Miners use powerful computers and significant amounts of energy to solve complex algorithm puzzles to validate and lock blocks of transactions into the blockchain, earning cryptocurrency for themselves in the process.
51% attack threshold: If a malicious attacker wanted to make a longer chain including fraudulent transactions, it must outperform the entire network's computational power.

The Proof of Stake (PoS): requires selected participants on the networks, the validators, to pledge capital to vouch for the block's validity.

This stake signals to the network that a validator is available to verify the veracity of a transaction and propose a block.
A majority of the other validators, who similarly staked a digital asset to the network, must then attest to the validity of proposed block.
Validators benefit from both proposing and attesting to the validity of blocks that have been proposed by other participants in a similar staking process.

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Permissioned vs. Permissionless

	Permissioned blockchain	Permissionless blockchain
Speed	• Faster as only a limited number of members participate or are authorized to validate transactions	• Slower as a large number of members have to reach consensus, which decreases network speed and scalability
Cost	• Cost-effective as few members are required to validate each transaction	• Not cost-effective as many members are required to validate each transaction
Decentralization	• Partially decentralized as there are a limited number of members in the chain	• Decentralized as all members can access the network
Access	• Membership is limited	• Membership is unlimited
Governance	• The governance is determined by a centralized organization.	• The governance is decentralized and is maintained by the members.

Investment Type-Cryptocurrencies

- The most common digital assets which are used to transfer or store value and allowed ***near-real-time transactions between parties without the need for an intermediary.***
  - Do not benefit from the backing of a central bank or a monetary authority.
  - ***High levels*** of price volatility because ***no consensus*** on how to value cryptocurrencies and the apparent ***lack of clear fundamentals underlying.***

Cryptocurrency Exchange

Fraud and manipulation risk(Pump and Dump Schemes and Ponzi Scheme)

Centralized exchanges

- ***Most popular*** type;
- Provide ***volume, liquidity,*** and ***price transparency;***
- ***Electronic*** and ***direct;***
- Hosted on ***private servers;***
- May ***leaking vital user information*** if paralyzed;
- May be ***regulated.***

Decentralized exchanges

- Emulate blockchain's ***decentralized protocol;***
- ***More difficult*** to attack;
- ***Difficult to regulate;***
- May lead to potentially ***illegal activity.***

Bitcoin(BTC or XBT)	• Designed as a ***medium*** of exchange and store of value. • Launched to secure payments in a ***P2P network.***
Ether	• Involves the ***added feature*** of a programmable blockchain that allows users to construct applications using the blockchain to validate or secure transactions or payments. • ***Smart coins or smart contracts.***

Stablecoins	• Designed to maintain a stable value ***by linking their value to another asset and are collateralized by a basket of assets.***
	    • The reserve basket ***protects*** the holders from ***price volatility*** and ***minimizes the transaction risk.***
	    • ***Cannot be exchanged*** for fiat money .
	    • Potentially ***facilitate settlement*** and ***streamline cross-border*** activities.

Meme Coins	• Launched for ***entertainment purposes,*** and often ***inspired by a joke.***
	    • Gain popularity in a ***short period*** of time.
	    • Allow early purchasers to sell holdings at a ***considerable profit.***

Central bank digital currencies(CBDCs):	• Designed as a tokenized version of the currency ***issued by the central bank***.

Investment Type-Cryptocurrencies

Non-fungible token (NFT)	• Links ***digital assets*** to ***certificates of authenticity*** using blockchain technology. • Each token ***is unique.*** • The most common use is trading in ***digital artwork.***
Security tokens	• Digitize the ownership rights associated with publicly traded securities. • ***Increases efficiency.*** • ***Initial coin offering (ICO):*** is ***unregulated process*** that companies sell their crypto-tokens to investors. • ***lower*** associated issuance costs, ***shorter*** capital-raising time frames, and typically have ***no voting rights*** compared with IPO.
Utility tokens	• Provide services within a network, such as pay for services and network fees.
Governance tokens	• serve as ***votes*** to determine how ***particular networks*** are run in ***permissionless*** networks.

Digital Forms of Investment for Non-Digital Assets

Asset-backed tokens	• ***Digital claims on*** assets that are ***collateralized*** by the underlying asset and ***derive their value directly from the underlying asset***. • ***Increase liquidity and transparency .*** • **Decentralized applications(Dapps)**: allow for transactions to take place and to be recorded on the blockchain ***without a central coordinating mechanism (DeFi).***

Investment Form

Direct	• Invest in digital assets are made on various digital exchanges.
	• Use of ***cryptocurrency wallet.***
	• ***Risk with direct investment:***
	    • ***Fraud risk:*** increased the popularity of the cryptocurrencies;
	    • ***Losing access to the passkey*** makes the holdings in the wallet irretrievable;
	    • ***"Whales" risk***: the amount is large enough to manipulate the price.

Indirect	• ***Cryptocurrency coin trusts:***
	    • Trade shares in trusts holding ***large pools of*** a cryptocurrency.
	    • Trade ***over the counter*** (OTC) and behave like ***closed-end funds.***
	    • May provide ***additional transparency*** into trading.
	• ***Cryptocurrency futures contracts:***
	    • Typically ***cash settled*** and is inherently ***leverage.***
	    • The market is ***less developed*** and potentially ***less liquid*** and ***more volatile.***
	• ***Cryptocurrency exchange-traded funds:***
	    • Seek to replicate digital asset(Do ***not directly invest*** in cryptocurrencies).
	    • Gain exposure using ***cash*** and ***cryptocurrency derivatives.***
	• ***Cryptocurrency stocks:***
	    • Indirect exposure due to their activity and relationship to digital asset.
	• ***Hedge funds investing in cryptocurrencies:***
	    • Discretionary long, long/short, quantitative, and multi-strategy.

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Digital Assets vs. Traditional Financial Assets

	Digital Assets	Traditional Financial Assets
Inherent value	• No fundamental value or future cash flow • Price driven by certain features on the blockchain	• Value determined by future cash flow generated from the assets
Transaction validation	• Usually recorded on decentralized digital ledgers using cryptography and algorithms for permissionless blockchain networks	• Recorded in private ledgers maintained by central intermediaries
Uses as a medium of exchange	• Very few digital assets are used as a direct medium of exchange, mainly targeting large-scale commercially viable acceptance	• Not used directly as a medium of exchange but can be readily transacted and exchanged into traditional fiat currencies that are widely used in the real world
Legal and regulatory protection	• Ambiguous, often contradictory, evolving framework; generally unregulated, with minimal legal protections • Use can be illegal or criminal in some countries	• Well-established, tested, and proven legal, regulatory, and commercial standards that are clear, predictable, and well defined across all jurisdictions

Risk/Return & Diversification

Return	• Bitcoin and other cryptocurrency values are based solely on asset appreciation, ***with no underlying cash flows.*** • ***The market demand for the limited supply*** of cryptocurrencies is a significant driver of prices.
Risk	• Investing in cryptocurrencies comes with material risks unique to digital assets. • Volatility has remained high. • ***No clear legal protection*** for using cryptocurrencies. • ***Fraud and criminal activities*** are rampant among buyers, sellers, issuers, and marketers of digital assets.
Diversification Benefit	• ***Low correlations*** with traditional asset.

Module 1 & 2

KEY TOPICS of ALTERNATIVE INVESTMENTS

Key Topics Of Alternative Investments

Characteristics Of Alternative Investments

Characteristics	• Need ***specialized knowledge*** to value cash flows and risks; • ***Low correlation*** of returns with more traditional asset classes; • ***Illiquidity;*** • ***long*** investment time horizons; • ***large*** capital outlays; • ***Different investment structures*** due to the challenges of direct investment; • ***Incentive-based fees*** to address/minimize information asymmetry between managers and investors; • ***Performance appraisal challenges.***
Reasons To Invest	• ***Diversification(low*** correlations between returns); • Higher ***expected returns*** (positive absolute return); • Potentially increased ***income*** through higher yields; • Illiquid and potentially ***less efficient markets***.

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Investment Methods

Fund Investing	• The investor contributes capital to a fund, and the fund makes investments. • *Indirect* method. • Fund *investors* are *unable to affect* the fund's underlying investments. • Fund *investors* have neither the sophistication nor the experience to invest directly. • Available for *all major* alternative investment types.
Direct Investing	• A *direct* investment in an asset with *no intermediary.* • Great *flexibility* and *control.* • For *larger* and more *sophisticated investors* and usually applies to *private equity* and *real estate.*

Co-investing	• The investor invests *indirectly* through fund but also possesses rights to invest *directly* in the *same assets.*
	• Managers benefit from choosing one or more co-investors.
	    • *Accelerate investment timing* when available funds and expected inflows are insufficient for a specific deal;
	    • *Expand the scope* of available new investments;
	    • *Increase diversification* of an existing pool of fund investments.

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Partnership

Limited partner (LP)

- LP is the investors who ***understand and able*** to bear the risks in the investment.
- LP owns a ***fractional interest (share of the partnership)*** based on investment.
- LPs play ***passive roles*** and are not involved with the management of the fund

General partner (GP)

- GP ***runs*** the business, bears unlimited liability for anything that goes wrong
- Operations and decisions of the fund are ***controlled solely*** by the GP

Limited partnership agreement	• A ***legal document*** that outlines the rules of the partnership and establishes the framework that ultimately guides the fund's operations throughout its life.
	  • The ***distribution*** of profits and losses;
	  • Manager ***roles and responsibilities;***
	  • Terms governing ***transfers, withdrawals, and dissolution*** of the agreement.

Side letters	• Agreements created between the GP and ***certain LPs*** that ***outside*** the LPA.
	  • Increased investor ability to ***transfer investments*** to a related or successor fund;
	  • ***Additional reporting*** due to an LP's ***unique circumstances;***
	  • ***First right of refusal*** and other similar clauses to outline potential treatment in comparison to other LPs;
	  • ***Notice requirements*** in the event of litigation, insolvency, etc;
	  • Most ***favored nation clauses***, such as agreeing that if similar LPs pay lower fees, they will be offered to the LP.

Valuation

Fair Value Hierarchy	• ***Level 1***: quoted prices in active markets for identical asset/liability that may be accessed as of measurement date.
	  • Exchange-traded public equity securities (observed closing market price)
	• ***Level 2***: Inputs other than quoted market prices in Level 1 that are directly or indirectly observable for an asset/liability
	  • Over-the-counter interest rate derivatives (pricing model using quoted market prices)
	• ***Level 3***: Unobservable inputs are used to measure fair value for asset/liability in which there is little, if any, market activity as of the measurement date
	  • Private equity or real estate investments (cash flow projection models with reasonably available market participant assumptions)

Alternative valuation consideration	• Interim valuation of private equity, real estate, and other less frequently traded assets based on Level 3 • ***Returns may be smoothed or overstated*** and ***the volatility of returns may be understated***.

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Custom Fee Arrangement

Management fee + Performance fee	• Alternative investments often ***levy additional performance fees*** based on a percentage of periodic fund returns. • Performance appraisal for these investments can be ***difficult to generalize*** because results may ***vary significantly*** based on which investor has invested when in a particular vehicle.
Fees based on liquidity terms and asset size	• ***Longer*** lockups resulting in ***lower*** fees. • Different investors in the same fund may face ***different fee structure.*** • Smaller funds with strong performance (and capacity constraints) are able to maintain ***higher*** fee.
Founders shares	• As a way to entice early participation in ***startup funds.*** • Entitle investors to a lower fee or reduce the fees for early founders share investors once the fund achieves a critical mass or performance targets.
“Either/or” fees	• ***Major institutional investors*** have demanded that alternative investment funds accept an either/or fee agreement by ***choosing*** between fixed management and variable performance fees. • Major investors offering larger commitments may negotiate such ***novel fee structures*** designed to reward returns in excess of a benchmark, while smaller investors, such as high-net-worth individuals with smaller commitments, usually face more traditional fees

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Compensation Structures

Management fee	• ***Hedge funds:*** ranging from 1% to 2% of ***assets under management***
	    • FOFs may charge ***extra*** 1% management fee and 10% incentive fee.
	• ***Private equity***: ranging from 1% to 2% of ***committed capital***
	    • ***Reduces the incentive*** for GPs to deploy the committed capital as quickly as possible to grow their fee base.
	    • This allows the GPs to be ***selective*** about deploying capital into investment opportunities.

Performance fee (incentive fee or carried interest)	• Based on ***excess returns***, typically ***20%***
	• ***Return Calculation(independently)***
	    • ***GP's return in currency terms:*** $R_{GP} = (P_1 \times r_m) + \max[0, (P_1 - P_0) \times p]$
	    • ***LP's Investor's periodic rate of return:*** $r_i = (P_1 - P_0 - R_{GP}) / P_0$
	• ***Return Calculation(net)***
	    • ***GP's return in currency terms:*** $R_{GP} = (P_1 \times r_m) + \max[0, [P_1 \times (1 - r_m) - P_0) \times p]$

Hurdle rate	• ***Hurdle rate***: a minimum return that GP ***must exceed*** to earn performance fee
	    • ***Hard hurdle rate***: fees on annual returns ***in excess*** of the hurdle rate
	    • ***Soft hurdle rate***: fee is on ***entire annual gross*** return if hurdle is exceeded
	• ***Return Calculation(hard hurdle rate)***
	    • ***GP's return in currency terms:*** $R_{GP(\text{Net with Hurdle})} = (P_1 \times r_m) + \max\{0, [P_1 (1 - r_m) - P_0 \times (1 + \text{Hurdle rate})] \times p\}$

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<table>
<tr><td rowspan="1">High-water mark</td><td colspan="2">

- Reflects the fund's ***peak value*** as of a performance calculation date ***net of fees***
- ***Protects*** LP from ***paying twice*** for the same performance
- ***Return Calculation***
  - ***GP's return in currency terms:*** $R_{GP(HWM)} = (P_1 \times r_m) + \max[0, [P_1 - P_{HWM}) \times p]$

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<tr><td>Catch-up clause</td><td colspan="2">

- 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
- The ***acceleration of performance fees*** once a fund ***exceeds the hurdle rate***

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<tr><td>Clawback</td><td colspan="2">

- The right of LPs to ***reclaim*** part of the GP's performance fee
- Clawback provisions are usually activated when a GP exits ***successful deals early*** on but incurs ***losses on deals later*** in the fund's life.

</td></tr>
<tr><td rowspan="2">Distribution waterfall</td><td>Deal-by-deal (or American) waterfalls</td><td>

- Allowing the GP to get paid ***before*** LPs receive both their initial investment and their preferred rate of return on the entire fund.
- ***Advantageous to the GP*** as performance fees are collected on a per-deal basis

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<tr><td>Whole-of-fund (or European) waterfalls</td><td>

- All distributions go to the LPs as deals are exited and the GP does not participate in any profits ***until*** the LPs receive their initial investment and the hurdle rate has been met.
- Occur at the aggregate fund level, more ***advantageous to the LPs***

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Thank
You!