

# Alternative Investments for Portfolio Management

CFA三级培训项目

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101% Contribution Breeds Professionalism

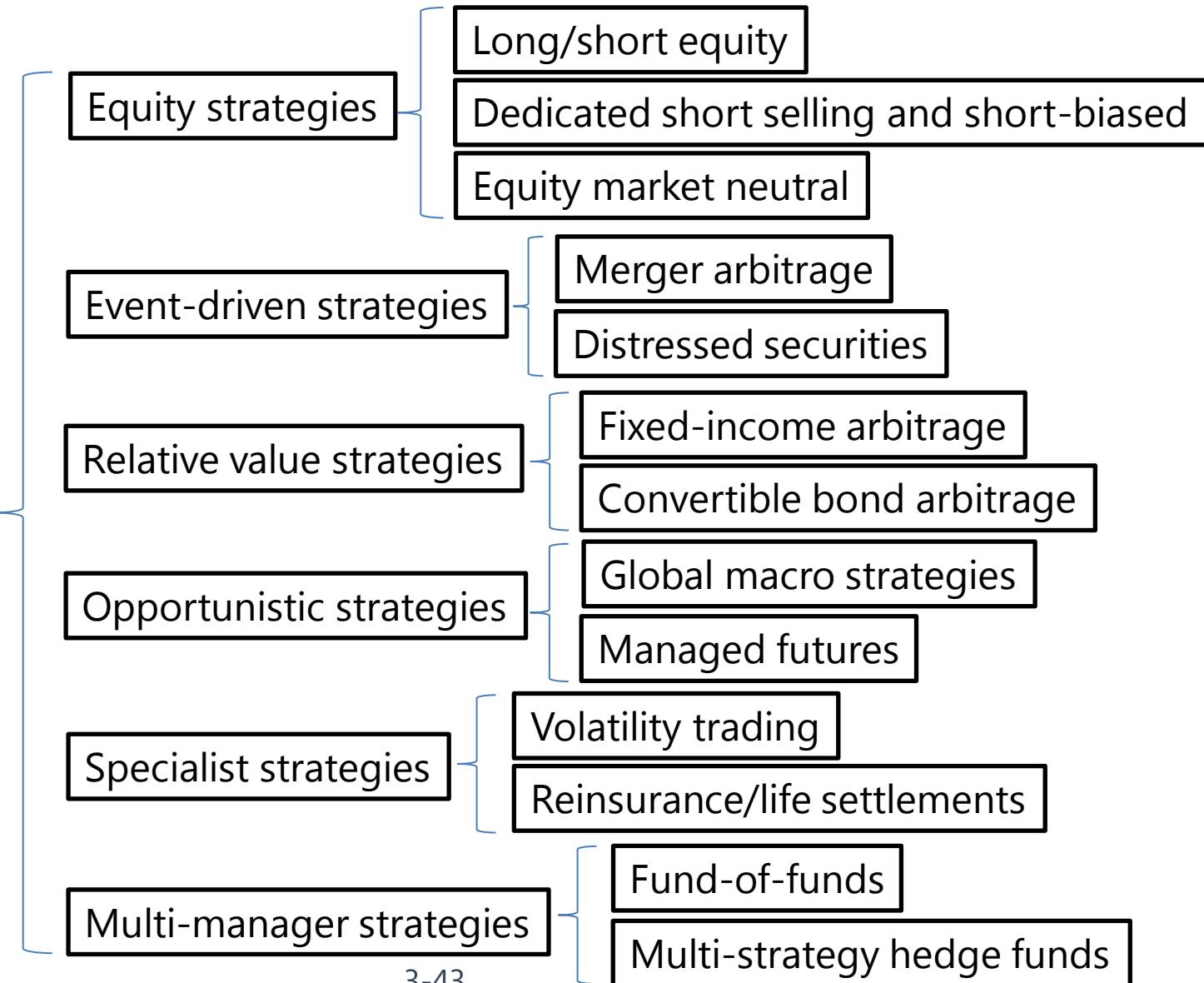
# 1. Hedge Fund Strategies 1



# Categorization

## ➤ O-Chart

### Hedge Fund Strategies





# Equity Strategies

- Equity-related hedge fund strategies focus primarily on stock markets.
  - Equity hedge fund strategies invest primarily in equity and equity-related instruments.
- **Types of equity-related hedge fund**
  - The size and sign of equity market exposure often dictate the classification of equity hedge fund strategies.
- **The main risk: equity-oriented risk.**
- **Equity-related hedge fund strategies**
  - Long/short equity;
  - Dedicated short bias;
  - Equity market neutral.



# Long/Short Equity

## ➤ Characteristic

- Varies strategies.
- Return profiles are typically aimed to achieve average annual returns roughly equivalent to a long-only approach but with a standard deviation 50% lower than a long-only approach.
- This strategy can typically be handled by both limited partner and mutual fund-type vehicles.
- Leverage Usage:
  - ✓ Variable: The more market-neutral or quantitative the strategy approach, the more levered the strategy application tends to be to achieve a meaningful return profile.

## ➤ Role in portfolio

- Liquid, diverse, with mark-to-market pricing driven by public market quotes;
- Added short-side exposure typically reduces beta risk and provides an additional source of potential alpha and reduced portfolio volatility.



# Dedicated Short Selling and Short-Biased

## ➤ Characteristics

- Lower return but with a negative correlation benefit.
- More volatile than a typical L/S equity hedge fund given short beta exposure.
- Managers have some ability to add alpha via market timing of portfolio beta tilt, but it is difficult to do with consistency or added alpha.
- This strategy is typically handled best in a limited partnership because of difficult operational aspects of short selling.
- Leverage Usage
  - ✓ Low: There is typically sufficient natural volatility that short-selling managers do not need to add much leverage.

## ➤ Role of portfolio

- Liquid, negatively correlated alpha to that of most other strategies, with mark-to-market pricing from public prices.
- But historic returns generally disappointing.



# Equity Market Neutral

## ➤ Characteristics

- Relatively modest return profiles
- High levels of diversification and liquidity and lower standard deviation
- Shorter horizons and more active trading
- High leverage
- Not to meet regulatory leverage limits for mutual fund vehicles

## ➤ Role in portfolio

- EMN strategies are especially attractive during periods of market vulnerability and weakness, since their sources of return and alpha do not require accepting beta risk.



# Event-Driven Strategies

- To attempt to profit from predicting the outcome of corporate events
- **Types of event-driven approach**
  - **Soft-catalyst event-driven approach**
  - **Hard-catalyst event-driven approach**
- **The main risk: event risk.**
- **Event-driven strategies**
  - Merger Arbitrage;
  - Distressed Securities.



# Merger Arbitrage

- **Strategy implementation**
  - **Cash-for-stock**
  - **Stock-for-stock acquisition**
- Merger arbitrage is comparable to writing insurance on an acquisition.
  - If the acquisition is completed as planned, the hedge fund earns an insurance premium.
  - If the transaction fails, the hedge fund stands to lose money.
- **Cross-border merger and acquisition (M&A)** where two countries and two regulatory authorities are involved are **more risky**.



# Merger Arbitrage

## ➤ Characteristics

- Relatively liquid strategy
- Market sensitivity and left-tail risk attributes (if the deals fail)
- Insurance-like plus a short put option
- Limited-partnership vehicle
- Leverage Usage (high)

## ➤ Role in portfolio

- Relatively high Sharpe ratios with typically low double-digit returns and mid-single digit standard deviation (depending on specific levels of leverage applied), but left-tail risk is associated with an otherwise steady return profile.



# Distressed Securities

➤ **Outcomes of bankruptcy process**

- **In liquidation**, the priority of claims

- ✓ Senior secured debt (high),
- ✓ Junior secured debt,
- ✓ Unsecured debt,
- ✓ Convertible debt,
- ✓ Preferred stock,
- ✓ Common stock (finally).

- **In re-organization**, a firm's capital structure is re-organized and terms for current claims are negotiated and revised.

➤ **Strategy implementation**

- In a liquidation situation, the focus is on determining the recovery value for different classes of claimants.

- In a reorganization situation, the focus is on how the firm's finances will be restructured and on assessing the value of the business enterprise and the future value of different classes of claims.



# Distressed Securities

## ➤ Characteristics

- More variability
- Usually long-biased
- Relatively high levels of illiquidity

## ➤ Role in portfolio

- Returns tend to be “lumpy” and somewhat cyclical.

## 2. Hedge Fund Strategies 2



# Fixed-Income Arbitrage

- To **exploit pricing inefficiencies** by taking **long and short positions** across a range of debt securities
- **Arbitrage opportunities sources**
  - Duration
  - Credit quality
  - Liquidity
  - Optionality
- **Strategy implementation**
  - **Most common types of fixed-income arbitrage strategies**
    - ✓ Considering yield curve trades
    - ✓ Carry trades
  - **The payoff profile** of this fixed-income arbitrage strategy resembles a short put option.



# Fixed-Income Arbitrage

## ➤ Characteristics

- High correlations found across different securities
- Very liquid
- High leverage usage

## ➤ Role in portfolio

- A function of correlations between different securities, the yield spread available, and the high number and wide diversity of debt securities across different markets.



# Convertible Bond Arbitrage

- A combination of straight debt plus a long equity call option with an exercise price equal to the strike price times **the conversion ratio** (conversion value).
- **Strategy implementation**
  - Buy the relatively undervalued convertible bond
  - Take a short position in the relatively overvalued underlying stock



# Convertible Bond Arbitrage

## ➤ Characteristics

- To extract and benefit from this structurally cheap source of implied volatility by **delta hedging** and **gamma trading** short equity hedges against their long convertible holdings
- Liquidity issues surface for convertible arbitrage strategies in two ways:
  - ✓ 1) naturally **less-liquid securities**
  - ✓ 2) availability and **cost** to borrow underlying equity for **short selling**
- **High levels of leverage**

## ➤ Role in portfolio

- Convertible arbitrage works best during periods of high convertible issuance, moderate volatility, and reasonable market liquidity.



# Global Macro Strategies

## ➤ Characteristics

- The **use of leverage**
- The key source of returns revolves around correctly discerning and capitalizing on trends in global markets.

## ➤ Role in portfolio

- Global macro can be very useful over a full market cycle in terms of portfolio diversification and alpha generation.



# Managed Futures

- **Characteristics**
  - **Highly liquid**
  - **More systematic approach**
  - Somewhat cyclical and **more volatile** end of the spectrum of hedge fund strategies (with volatility positively related to the strategy's time horizon)
  - **High leverage**
- **Role in portfolio**
  - Returns of managed futures strategies typically exhibit **positive right-tail skewness** in periods of market stress, which is very useful for portfolio diversification.



# Volatility Trading

- The goal is to source and buy cheap volatility and sell more expensive volatility while netting out the time decay aspects normally associated with options portfolios.
- **Type of relative value volatility trading**
  - **Time-zone arbitrage**
  - **Cross-asset volatility trading**



# Volatility Trading

## ➤ Characteristics

- Positive convexity
- Liquidity varies across the different instruments
- Outsized gains with very little up-front risk.

## ➤ Role in portfolio

- A useful source of portfolio return alpha across different geographies and asset classes.



# Reinsurance/Life Settlements

## ➤ Strategy implementation

- The hedge fund would look for the following policy characteristics:
  - ✓ 1) the low surrender
  - ✓ 2) the low ongoing premium payments
  - ✓ 3) the relatively high probability that the designated insured person is indeed likely to die within a certain period of time
- On finding the appropriate, to pay a lump sum (via a broker) to the policyholder(s)
- Valuation methods for catastrophe insurance may require the hedge fund manager to consider global weather patterns and make forecasts.



# Reinsurance/Life Settlements

## ➤ Characteristics

- Life insurance protects the policyholder's dependents in the case of his/her death.
- A hedge fund strategy focusing on life settlements involves analyzing pools of life insurance contracts being offered for sale.
- Organized markets for catastrophe bonds and catastrophe risk futures continue to develop.

## ➤ Role in portfolio

- A very appealing feature of insurance investments in a portfolio is that the risk inherent in these strategies is almost entirely uncorrelated with market risks and business cycles.

### 3. Multi-Manager Strategies



# Multi-Manager Strategies

➤ **Three main approaches:**

- 1) Creating one's own mix of managers by investing directly into individual hedge funds running different strategies;
- 2) **Fund-of-funds;**
- 3) **Multi-strategy funds.**



# Fund-of-Funds

## ➤ Characteristics

- To be important for smaller high-net-worth investors and smaller institutions
- Levered capital to FoFs.
- Other attractive features
- More diverse strategy mix but with less transparency and slower tactical reaction time

## ➤ Role in portfolio

- By combining different and ideally less correlated strategies, a FoF portfolio should **provide more diversification, less extreme risk exposures, lower realized volatility, and generally less single manager tail risk** than direct investing in individual hedge fund strategies.



# Multi-Strategy Hedge Funds

## ➤ Strategy implementation

- To combine multiple hedge fund strategies under the same hedge fund structure

## ➤ Characteristics

- To generally outperform with more variance and occasional large losses often related to **their higher leverage**
- To offer potentially faster tactical asset allocation and improved fee structure (netting risk handled at strategy level) but with higher manager-specific operational risks
- To impose investor-level or fund-level gates on maximum redemptions allowed per quarter
- To be somewhat more **prone to left-tail blow-up risk in stress periods**
- More resilient

## ➤ Role in portfolio

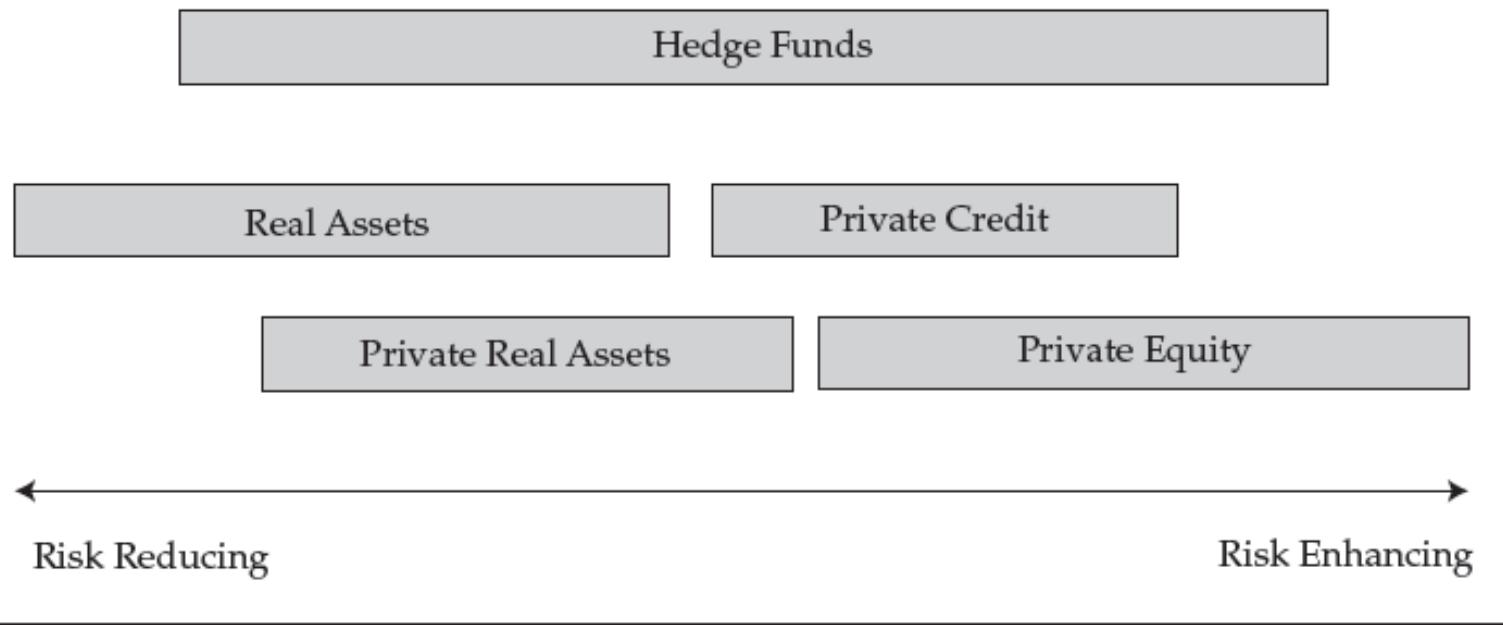
- The multi-strategy manager can react faster to different real-time market impacts.

## 4. Asset Allocation to Alternative Investments

# ◆ Roles in Multi-Asset Portfolios - Alternatives

- Overall, the goal of adding alternative investments to a portfolio is most often to improve the portfolio's risk and returns profile.

## Exhibit 1 Alternative Investments in the Risk/Reward Continuum





# Diversifying Equity risks: Short Time Horizon

- For a **short investment horizon**, the primary risk is **returns volatility**.
- To **be biased downward** for a number of reasons:
  - **Appraisal-based valuations**
  - Sampling biases, such as **survivorship bias and backfill bias**
  - Low correlations of returns with each other



# Diversifying Equity risks: Long Time Horizon

- With a **long time horizon**, the primary risk is the failure of achieving a minimum required rate of return over time.
- **Alternative investments can be a better choice for diversification.**



### 3. Investment Opportunity Set

**Exhibit 14 (Continued)**

Asset Classes	Equity	Size	Value	Liquidity	Nominal Duration	Inflation	Credit Spread	Currency	R-squared
Hedge Funds	0.3	0.1					0.6		0.74
HF Macro	0.2	0.2			1.9	3.1	-0.9	0.1	0.28
HF Equity Mkt. Neut.	0.1								0.14
HF Equity Hedged	0.5								0.72
HF Distressed	0.1	0.2					1.8		0.72
Commodities						18.0		0.8	0.36
Public Real Estate	0.9				4.6	0.9			0.38
Private Real Estate	0.2			0.1		2.4			0.20
Buyout & Growth Equities	0.6	0.2	-0.3	0.1					0.70
Venture Capital	0.8	0.6	-1.8	0.2					0.38

## 5. Approaches to Asset Allocation



# Approaches to Asset Allocation

- A suggested approach to including alternative investments in an asset allocation decision is to do it in two stages:
  - First with only the traditional asset classes;
  - Then also considering alternative investments.
    - ✓ The second process can be assisted by statistical tools such as:
      - Monte Carlo simulation.
      - Mean-variance optimization.
      - Risk factor based optimization.
    - ✓ These approaches can be used individually or in combination.



# Approaches to Asset Allocation

## ➤ Monte Carlo simulation

- 1) To simulate risk factor or asset return scenarios that exhibit the skewness and kurtosis commonly seen in alternative investments.
- 2) To illustrate simulation-based risk and return analytics over a long time horizon in a broad asset allocation context.
- **Steps of model construction process**
  - ✓ 1. Decide between asset class returns or risk factors as the variables to be simulated
  - ✓ 2. Establish the quantitative framework
  - ✓ 3. To translate them to asset class returns (based on risk factors)
  - ✓ 4. To use the resulting asset class return scenarios to develop meaningful outputs



# Approaches to Asset Allocation

## ➤ Optimization techniques

- Mean–variance optimization (MVO) typically over-allocates to alternative asset classes, because:
  - ✓ risk is underestimated because of stale or infrequent pricing;
  - ✓ the underlying assumption that returns are normally distributed.
- Practitioners usually address this bias towards alternatives by **establishing limits on the allocations to alternatives.**
- Optimization methods that **incorporate downside risk** (mean–CVaR optimization) or **take into account skew** may be used to enhance the asset allocation process.
- **Limitation**
  - ✓ Small changes in the inputs may generate significant changes in optimal asset allocations.



# Approaches to Asset Allocation

## ➤ Risk factor based optimization

- Risk factor based optimization is similar to MVO, but instead of modeling asset classes by their return and risk characteristics, the investor **models risk factors and factor return expectations**.
- A risk factor based approach requires the additional step of translating the optimized risk exposures to an asset allocation to achieve them.
- **Limitations**
  - ✓ Asset classes' return **sensitivity** to some risk factor exposures might not be stable over time.
  - ✓ **Correlations** among risk factors may behave like correlations among asset class returns and increase during periods of financial stress.

## 6. Liquidity Planning



# Liquidity Planning

- Achieve and maintain the desired allocation
  - Cash flows for a typical private investment partnership are capital calls in the early years and distributions in the later years.
- A simple model (estimate the cash flows to and from a fund)
  - Capital Contribution = Rate of Contribution × (Capital Commitment – Paid-in-Capital)
    - ✓  $C_t = C\%_t \times (CC - PIC)$
  - Distributions from a fund can be modeled as percentages of its net asset value.
  - Distributions in period  $t$  = percentage to be distributed in period  $t$  × [NAV in period  $t-1$  × (1+growth rate)]
    - ✓  $D_t = D\%_t \times [NAV_{t-1} \times (1+g)]$
    - ✓ growth rate = IRR of its investments
    - ✓  $NAV_t = NAV_{t-1} \times (1+g) + C_t - D_t$



# Example



## ➤ Liquidity Planning for Private Investments

The NAV of an investor's share in a private renewable energy fund was €30 million at the end of 2020. All capital has been called. The investor expects a 20% distribution to be paid at the end of 2021. The expected growth rate is 12%. What is the expected NAV at year-end 2022?

## ➤ Solution

- The expected distribution at the end of 2021 is €6.72 million [ $(€30 \text{ million} \times 1.12) \times 20\%$ ].
- The NAV at year-end 2021 is therefore  $30 \times (1+12\%) + 0 - 6.72 = 26.88$
- The NAV at year-end 2022 =  $26.88 \times (1+12\%) = 30.1056$  million



# Considerations in Monitoring Programs

## ➤ Performance Evaluation

- Monitoring of alternative investments can be challenging because their performance reporting can be **infrequent** and come with **significant time lags**.
- A further complication with private investments is that they often report internal rates of return rather than time-weighted rates of return.
  - ✓ IRR is influenced by the timing of capital calls and distributions, and therefore, may be subject to manipulation.
  - ✓ Investors may prefer to monitor a private fund's multiple on invested capital (**MOIC**).
- If capital is **returned quickly** (thereby possibly producing extraordinarily high IRRs), the investor may want to put greater emphasis on the **MOIC** measure. Similarly, funds that **return capital more slowly** than expected might want to put greater weight on the **IRR** measure.



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

Search for knowledge, read more, sit on your front porch and admire the view without paying attention to your needs.

寻找更多的知识，多读一些书，坐在你家的前廊里，以赞美的眼光去享受眼前的风景，不要带上任何功利的想法。



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