Module 17: Hedge Fund Strategies

17.a. Classifications on hedge fund strategies.

1. Equity Related

2. Event driven

3. Relative Value
   (e.g. arbitage & convertible bond arbitage)
4. Opportunistic

5. Specialist
   (e.g. volatility strategy & reinsurance strategies)

6. Multi-manager
   (e.g. multi-strategy funds, funds-of-funds)

MODULE QUIZ 17.1

1. A convertible bond arbitrage strategy is *most likely* classified as:
   A. a specialist strategy.
   B. an event-driven strategy.
   C. a relative value strategy.
2. A managed futures hedge fund strategy is *most likely* classified as:
   A. an opportunistic strategy.
   B. a specialist strategy.
   C. a relative value strategy.

1. C
2. A

17.2: Equity, Event-Driven, Relative Value.

Equity-Related Hedge Fund Strategies.

L/S Equity

- purchases stocks that they think will rise in value, sells. stocks they believe will fall.
- Investment Characteristics:
  - Beta of portfolio = sum of beta of all positions.
  - typically have 40-60% net long exposure
  - aspire to have returns comparable to long-only funds but half the amt of S.D.
- Strategy Implementation:
  - usually takes a sector-specific focus
  - may also use index funds to achieve a desired exposure
- Role in a portfolio:
  - attempt to source alpha

Dedicated Short Selling & Short-Biased

Dedicated short selling: seek out overpriced securities to sell short.

Short-biased: similar to dedicated short selling except usually offset by net long exposure

- Investment Characteristics:

aim to produce negative correlation w/ conventional securities

Equity L/S: 70-90% Long, 20%-50% Short
Dedicated Short: 60-120% short
Short-biased: 30-60% net short

- Strategy Implementation:
  - most challenging part = finding securities that will lose value
  - dedicated short seller = net 60-120% short
  - short-biased = net 30%-60% short
  - relatively use little leverage
- Role in a portfolio:
  - produce returns uncorrelated / neg. correlated w/ the returns of conventional portfolio assets
  - comes @ a cost: expected returns of short strategies are relatively low

Equity Market Neutral (EMN)

- attain a near-zero overall exposure via taking various long & short positions
- alpha is intended to be derived from taking positions that are mispriced
- Investment Characteristics:
  - generate alpha while being IMMUNE TO MARKET MOVEMENT.
  - offer significant diversification & low volatility (& return)
- Strategy Implementation:
  - purchases temporarily underpriced securities & sells. temporarily overpriced securities ⇒ ALPHA.
  - more common to rely on a fixed set of rules to determine trade opportunities (i.e. quantitative managers).
  - Usually apply leverage

- Popular subtype:
  Pairs trading: 2 stocks w/ similar characteristics are respectively undervalued & overvalued.
  Stubs trading: long & short shares of parent comp. & subsidiary
  Multi-class trading: long & short shares of multiple classes of the same comp.
- Role in a portfolio:
  - valuable during times w/ volatile market & performing poorly

17.C: Event-driven Strategies
- attempt to profit from corp. events (i.e. bankruptcies, mergers, restructuring, acquisitions)
- soft-catalyst: investment made b4 event is announced
  hard-catalyst: investment made after event is announced
- main risk = event risk (the chance that the outcome of event might be as expected, e.g. merger failure)

Merger Arbitrage
- attempt to profit from the uncertainty exists btw the time the acquisition is announced & being completed
- similar to writing insurance on an acquisition: if acquisition is completed, earn insurance prem, otherwise payout
- Investment Characteristics:
  - if merger fails, acquirer price rises, target price falls. (≈ 40% loss, SIGNIFICANT LEFT-TAIL RISK!!)

- Strategy Implementation:
  - usually buy the stock of the target & short the acquirer.
  - less often to short the merger
  - usually apply 300-500% leverage
- Role in a portfolio:
  - provides high Shape ratio but significant left-tail risk.

Distressed Securities

- buy distressed securities and profit via liquidation/reorg.
- Investment Characteristics:
  - greater return but higher variability of outcomes

usually short equity & long CB. but long bias

- Strategy Implementation:
  - can take different forms
  - might acquire the majority of a certain asset class to take creditor control.
- Role in a portfolio:
  - involves moderately high of iliquidity due to the nature of assets purchased

17.d: Relative Value Hedge Fund Strategies

(exploit valuation diff b/w securities)

FI Arbitrage

(exploit mispricing of FI securities).

- Investment Characteristics :
  - relatively small return, significant level of leverage is used
  - liquidity varies on the particular strategy & type of FI instrument.
- Strategy Implementation :
  2 subtypes : YC trades & carry trades
  - YC trades : has a view of how YC will evolve over time. & long & short the securities accordingly
  - Carry trades. :

- Role in a portfolio :
  - Similar to writing puts. (earning returns from the spread narrowing & return from positive carry)

Convertible Bond Arbitrage

profiting from purchasing the implied vol. of CB (often underpriced), will take on other positions to hedge out the delta & gamma risk of CB holdings. (e.g. short equity)

- Investment Characteristics :
  - 2 main sources of liquidity issues :
    1. requires manager to short sell underlying
    2. FI products invested in are usually quite niche
- Strategy Implementation :
  - exploit the option within CB exhibits low imp. vol. when comp. to historical volatilities of underlying equity.

- Challenge of CB arbitrage = hedge away other sources of risk (i.e. market risk, int rate risk, credit risk)
- usually use significant amount of leverage

- Role in a portfolio:
  - perform well in times of modest volatility, available liquidity
  - perform poorly in periods of iliquidity or weak credit

MODULE QUIZ 17.2

1. Considering various equity-related hedge fund strategies, a strategy that is *most likely* to apply relatively high levels of leverage is:
   A. an EMN strategy.
   B. a dedicated short strategy.
   C. a short-biased strategy.
2. An equity-related hedge fund strategy with gross exposures of 80% long and 35% short is *most likely* to be classified as:
   A. a dedicated short strategy.
   B. a short-biased strategy.
   C. a long/short equity strategy.
3. Relative to other hedge fund strategies, EMN strategies are *most likely* to:
   A. exhibit relatively modest returns.
   B. be vulnerable to periods of market weakness.
   C. earn return from alpha and beta risk.
4. An investment in distressed securities is *most likely* to be characterized by:
   A. a long bias.
   B. a high level of liquidity.
   C. a large amount of leverage.
5. In a sequential payoff during a liquidation, the security holder that is *most likely* to be paid off first is the holder of:
   A. junior secured debt.
   B. convertible debt.
   C. preferred stock.
6. In implementing a convertible arbitrage strategy, the portfolio manager is *most likely* to take a position that is:
   A. long convertible bonds and short equity.
   B. long straight bonds and short convertible bonds.
   C. long convertible bonds and short straight bonds.

1. B x A EMN strategies use significant level of leverage, dedicated short & short-biased strategy doesn't use leverage
2. B x C
3. A ✓

4. C x A
5. A /
6. B x A

17.3 : Opportuntistic, specialist & Multi-manager strategies

Opportunistic Hedge Fund Strategies

take top-down approach, marco investments
systematic
discretionary

2 opportunistic strategies : Global Macro & Managed Futures

Global Macro Strategies

making correct assessments & forecasts of global econ. variables

- Investment Characteristics :
  either discretional (e.g. go long/short on companies benefit/disadvantaged from expected int. rate hike) or thematic (e.g. buy firms that will benefit from free trade deals)
  low-volatility-mean-reverting markets ARE NOT FAVORABLE
  Significant potential for unsuccessful investments when global economy doesn't behave as expected

- Strategy Implementation:
  top-down analysis then macro trends
  600% - 700% leverage
  tends to use discretionary approaches more than Managed Futures
  to predict whether its undervalued / overvalued:
  directional predictions → use fundamental info
  relative value strategy → compared securities w/ each other
- Role in a portfolio:
  can add alpha & diversification when adding to portfolios of traditional assets
  contrarian tendency to take on position & wait for the rest of market to come around (e.g. 2008 subprime mortgage crisis)
  can deliver significant right-tail skewed returns during times of market stress which is beneficial for portfolio diversification but not exactly reliable to be used

Managed Futures

take L/S positions in variety of derivatives positions.

- Investment Characteristics:
  enter into futures contracts to gain desired exposures (rather than buying/selling assets)
  easily apply leverage
  extremely liquid. (b/c futures are liquid)
  downside: Crowding (too many market participants pursuing some trades / using same signals, leading to possible slippage)

- Strategy Implementation:

no. of ways to do this:

TSM (time-series momentum): buy securities that have been rising & sell securities that have been falling

CSM (cross-sectional momentum): TSM but for a particular asset class (i.e. a cross section of assets)

Exiting methodologies can be based on:

- price target
- Momentum reversal
- Time
- Trailing stop-loss
- some combo. of the above

more portfolio managers using the same signals → the less effective

typically implemented using systematic approaches

- Role in a portfolio:

typically little correlation w/ traditional equity & FI & generates total risk-adjusted returns

proven worthy during times of market stress.

17.f: Specialist Strategies

generate returns uncorrelated w/ traditional equity & FI & generates high risk-adjusted returns

Volatility trading

goal: buy/sell underpriced/overpriced volatility

e.g. price of volatility in asia is lower than other regions.

Tokyo Stock Exchange has higher realized volatility than NYSE but lower implied volatility

can also act as counterparties to market participants that seek long vol. (b/c the neg. correlation b/w stock mkt. return & equity vol. is high) but can unravel in dramatic fashion

most common futures: VIX Futures.

- Investment Characteristics:

vary depending on securities invested & positions taken.

Short vol → earn premiums, stable returns under avg. market conditions

long vol → hedge

liquidity: varies

easy to apply leverage & pos. convexity. means long volatility can produce high returns while taking little risk.

- Strategy Implementation:

Several options:

1. option strategies (e.g. straddles, cal spread, bull spreads)
2. OTC options customize to meet the PM's specific needs. (drawback = counterparty risk, liquidity issue)
3. VIX Futures. (direct but VIX index is mean-reverting & crowding issues)
4. OTC variance/volatility swaps.

- Role in a portfolio:
potent diversifier but comes with the price of the premium

Reinsurance / Life Settlements

hedge fund will buy life insurance from individuals. who feel that they can no longer benefit from the policy individuals. are incentivized to sell b/c those firms will often pay more for the policy than the issuing insurance

hedge funds are also increasingly investing in catastrophe risk reinsurance. (reinsurance = insurance companies selling off some of the risk to reinsurance companies.)
sell-off process:
insurance companies → reinsurance companies → heage fund
reinsurance can be a rewarding investment if diversity (by geography & types). can be achieved.

- Investment Characteristics:
iliquid b/c insurance policies are somewhat difficult to sell.

- Strategy Implementation:
"life settlement" refers to secondary market transaction on an insurance policy
the hedge fund will consider the pool of insurnee policies attractive if:
- low policy purchase price
- low policy ongoing premium

- the insureed person is relatively soon to die.

major prerequisite: develop accurate estimate of life expectanies.

- Role in a portfolio:

risk in these insurance policies is almost entirely uncorreloted w/ market risk

→ add alpha & return diversification

Multi-manager Hedge Fund Strategies

Fund-of-Fund

disadvantages: double fees, lack of transparency, no perf. fee netting, additional agent-principal issues

- Investment Characteristics:

typical hedge fund will have. "2 & 20" fee structure (2% management fee, 20% perf. fee). FoF will have 1% additional fee & 20% incentive fee on top.

FoF makes investing in hedge funds practical for small investors compared to directly investing in the underlying HFs, investing in FoF will save a lot of due diligence work & require less investment capital.

Challenge = liquidity (FoF may require one-yr lock-up but underlying funds might have stricter limits)

FoF investors might face <u>netting risk</u> (i.e. required to pay perf. fee on successful underlying fund even tho FoF perf is poor)

Strategy Implementation

- Role in a portfolio:

greater diversification, steady returns, less concentrated exposure to risk, less volatility, less exposure to downside risk of individual fund manager

Multi-Strategy Hedge Funds

Similar to FoF

holding a no. of strategies.

use the diversification to produce low-volatility returns.

all sub-funds are managed by the same organization

unlike FoF

- Investment Characteristics:

Simliar to FoF except multi-strategy have higher operational risks (b/c of all of the operational processes are under the same roof).

diversity of sub-funds in multi-strategy funds are somewhat limited

advantage of multi-strategy over FoF:

- quicker speed & ease. to make tactical allocation
- usually more attractive fees.

- Strategy Implementation:

key advantage: risk management, tactical allocation & better understanding of the correletion b/w the funds

often use greater use of leverage.

- Role in a portfolio
add diversification & steady, low-volatility returns. generally performed better than FoF b/c of superior fee structure & greater ability to execute tactical allocation but higher leverage → greater left-tail risk.

MODULE QUIZ 17.3

1. Considering global macro strategies and managed futures strategies, it would be *most accurate* to state that:
   A. managed futures strategies use more discretionary approaches.
   B. global macro strategies use more systematic approaches.
   C. both strategies tend to be highly liquid and use high leverage.
2. During periods of market stress:
   A. managed futures and global macro both exhibit right-tail skewness.
   B. managed futures strategies exhibit left-tail skewness.
   C. global macro strategies exhibit left-tail skewness.
3. Considering the correlation between equity volatility and equity market returns, the two measures are *most likely* to be:
   A. highly positively correlated.
   B. predominantly uncorrelated.
   C. highly negatively correlated.
4. A hedge fund is *most likely* to purchase a pool of life insurance policies that has high:
   A. surrender value.
   B. ongoing premium payments.
   C. likelihood of the insured person dying soon.
5. Compared to a multi-strategy fund, a fund-of-funds is *most likely* to offer the investor a more:
   A. effective tactical asset allocation.
   B. attractive fee structure.
   C. diverse strategy mix.
6. Compared to a multi-strategy fund, a fund-of-funds is *most likely* to offer an investor higher:
   A. transparency.
   B. netting risks.
   C. leverage.

1. B x © Managed Future

2. A ✓
3. C ✓
4. C ✓
5. C ✓
6. B ✓

Module 17.4: Factor Models & Portfolio impacts of Hedge Funds

Factor Models.

Conditional Factor Risk Model

$$(\text{return on HF}) = \alpha_i + \beta_{i,1}(\text{Factor 1})_t + \beta_{i,2}(\text{Factor 2})_t + \ldots + \beta_{i,K}(\text{Factor K})_t + D_t\beta_{i,1}(\text{Factor 1})_t + D_t\beta_{i,2}(\text{Factor 2})_t + \ldots + D_t\beta_{i,K}(\text{Factor K})_t + (\text{error})_{i,t}$$

α_i = intercept

$\beta_{i,K}(\text{Factor K})_t$ = exposure during normal periods to risk factor K.

D_t = dummy variable, 0 during normal periods, 1 during financial crisis.

$D_t\beta_{i,K}(\text{Factor K})_t$ = incremental exposure to risk factor K. during a financial crisis

Any returns not explained by risk factors can be attributed to either alpha or error.

incorporates four factors: equity risk, credit risk, currency risk, volatility risk.

Stepwise regression is used to avoid multicollinearity problems.

17.i impact of allocation to a hedge fund strategy

60 Eq. 40 FI ⟶ 60×80% = 48 Eq., 40·80% = 32 FI, 20% HF.

Portfolio contribution to a 60/40 Portfolio result:

- total portfolio S.D. decreases.
- Sharpe ratio increases
- sortino ratio increases
- Max drawdown decreases in ~ 1/3 of portfolios

Risk-Adjusted Performance

Sharpe ratio: risk-adjusted risk measure used to calculate the Sharpe ratio is S.D so both downside & upside S.D result in lower sharpe ratio.

Strategies w/ high sharpe ratio:

- Systematic futures hedge funds.
- Distressed securities.
- Fixed-income arbitrage.
- Global macro
- Equity market neutral

Sortino ratio: risk-adjusted risk measure but only downside deviations are considered to reflect risk.

Strategies w/ high sortino ratio:

- Systematic futures
- Event driven.
- L/S equity
- Equity market neutral

Hedges funds w/ NO enhanced risk-adjusted perf:
- Fund-of-fund
- Multi-Strategy

Risk Metrics.

S.D.

lowest S.D of returns for the overall portfolio:
- Dedicated short-biased
- Bear market neutral

These funds also produced notably low S.D:
- systematic futures.
- FoF: macro/ systematic.
- Equity market neutral

Funds that have little. positive impact on reducing S.D. of the overall portfolio:
- Event-driven: distressed securities.
- Relative value: Convertible arbitrage.

Drawdown

Defined as the peak-to-trough decline for a portfolio, generally quoted as the % drop b/w a peak & the subsequent trough. The high-water mark refers to the max. value the portfolio has ever reached.

Strategies w/ low mex drawdown:

- Systematic futures
- Equity market neutral
- Global macro
- Merger arbitrage

MODULE QUIZ 17.4

1. Conditional linear factor models used to understand hedge fund risk exposures are *most likely* to use factors including:
   A. liquidity risk, operational risk, valuation risk, and systemic risk.
   B. interest rate risk, commodity risk, margining risk, and concentration risk.
   C. equity risk, credit risk, currency risk, and volatility risk.
2. Adding a 20% allocation of a hedge fund strategy to a traditional 60%/40% portfolio is *most likely* to increase the total portfolio's:
   A. standard deviation.
   B. maximum drawdown.
   C. Sortino ratio.
3. The risk-adjusted performance of a traditional 60%/40% portfolio is *most likely* to be improved by adding an allocation to a hedge fund using the strategy of:
   A. equity market neutral.
   B. fund-of-funds.
   C. multi-strategy.

1. C ✓
2. C ✓
3. A ✓