Diferent Arbitrage Strategies

- Convergence trades (pairs trading), statistical arb
- **Equity:** value, B/M, P/E, size, momentum, *merger, carve outs*
- **Fixed income:** swap spread, yield curve, mortgage, distressed
- **FX:** carry trade (uncovered interest parity), devaluation
- **Derivative:** index options, correlation trade
- **Across markets:** index arb, convertible bond arb, capital structure, CDS basis
MERGER ARBITRAGE

- Returns are generated by isolating and bearing deal risk
- Risky application of the Law of One Price
  - Conditional on deal success, there is a perfect substitute
  - If the deal fails, there is no opportunity
ISOLATING DEAL RISK

- Cash merger
  - Buy target and wait

- Fixed-exchange ratio stock
  - Buy target
  - Short acquirer immediately

- Floating-exchange ratio stock
  - Buy target
  - Short acquirer during pricing period (not immediately)

- Collar stock merger
  - Buy target
  - Delta hedge acquirer stock
- Promised Payoff = $65
  - Payoff is independent of acquirer stock price
  - Buy target
  - Do not take a position in the acquirer
- Promised Payoff = 1.25 shares x $P_{Acquirer}$
  - Buy 1 share of target
  - Short sell 1.25 acquirer shares
Promised Payoff = $50 worth of acquirer shares, based on average price over a pricing period

- Initially, just like a cash deal
- After pricing period, just like a fixed-exchange ratio deal
- Buy target
- No initial position in acquirer
- Short sell acquirer during the pricing period
- **Promised Payoff**
  - \( P_{\text{Acquirer}} < \$90.74: \) 1 target = 2.15 acquirer
  - \$90.74 < \( P_{\text{Acquirer}} < \$136.14: \) 1 target = \$195.10
  - \( P_{\text{Acquirer}} > \$136.14: \) 1 target = 1.433 acquirer

Hedge risk with put and call if they are traded – otherwise \( \Delta \)-hedge
Five Months to Completion (Vol=25%, RF=6%)
Managers tell you the strategy comes down to figuring out which deals are going to blow-up

Ask them the following:

- How many deals are out there?
- How many are in your portfolio?
- What is your maximum weight?
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Ask them the following:

- How many deals are out there?
  - 50
- How many are in your portfolio?
  - 50
- What is your maximum weight?
  - About 2%
WHICH DEALS BLOW-UP?

- Deals with big spreads!
- Market distinguishes good and bad deals, *ex ante*
  - About 10% of all deals fail
- Hostile deals are more likely to fail

![Graph showing median arbitrage spread vs. number of trading days until resolution.]

## HISTORICAL PERFORMANCE

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<th>YEAR</th>
<th>JAN</th>
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Mean 10.2% 4.5% 5.7%
Std 6.8% 1.9% 6.3%
Sharpe 0.91

Source: Hedge Fund Research Inc. - © 2006 HFR Inc. - www.hedgefundresearch.com
DISTRIBUTION OF MONTHLY RETURNS

Value Weighted Average Return Histogram

Monthly Return

Frequency

-10% -8% -6% -4% -2% 0% 2% 4% 6% 8% 10%
2 Types of Shocks

- Bidding contests are great news
  - Higher than expected payoffs for target shares
  - Tend to be idiosyncratic
  - Recently, few of these

- Failures are bad news
  - Very negative returns on failed deals
  - Tend to be correlated with the market (and each other)
  - Recently, lots of these
If deal risk is idiosyncratic
  - Rf is appropriate rate to compensate for time

If deal risk is systematic
  - Additional compensation is required
- Merger arbitrage returns are largely uncorrelated with the market in neutral and bull markets. However, correlations increase significantly in bear markets.
Beta is different in up and down markets

Cannot use standard methods to evaluate risk arbitrage performance
  - Linear asset pricing models do not apply
  - “Alpha” may not reflect excess return

Risk Arbitrage is like selling out-of-the-money index put options
Simple, entry-level strategy

Capital tends to chase performance
  - Lots of money flowed into strategy over the past 5 years

Recent returns have been modest
IS MERGER ARB DEAD?

- Simple, entry-level strategy
- Capital tends to chase performance
  - Lots of money flowed into strategy over the past 5 years
- Recent returns have been modest
- But, providing a service
  - Offering liquidity to target shareholders
### Carve Outs

- **Carve Out**: A situation in which a parent company sells part of its subsidiary, usually in an IPO. Usually, the parent company will eventually sell the rest of the child company in the open market, also called partial spinoff.

- **Negative Stub Value**: Parent’s ownership stake of subsidiary exceeds parents market cap.
  
  \[ V_{Stub} = MV_{Equity} - MV_{Stake} - (MV_{Other\ Assets} - MV_{Liabilities}) \]
Managing a portfolio of individual merger arbitrage positions

- Leverage
- Determining the weight for a newly announced deal
- Value of financial slack
- Deciding whether to pursue other non-merger arbitrage opportunities
MARGINS

- **Initial Margin (50%)**
  - No constraints
  - Can’t add to your position;
  - Not received a margin call.
  - Reg. T 50%

- **Maintenance Margin (35%)**
  - NYSE/NASD 25% long
    30% short
  - Fixed amount of time to get to a specified point above the maintenance level before your position is liquidated.
  - Failure to return to the initial margin requirements within the specified period of time results in forced liquidation.

- **Minimum Margin (25%)**
  - Position is always immediately liquidated
Hold well diversified portfolio
(don’t put all your money on one deal)