Topics in Hedge Fund Strategies (B40.3121)

Fall 2010, Wednesday 6 pm - 9 pm (Sept. 22nd – Oct. 27th)

Instructor
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Teaching Assistant
TBD

Course Description
This course surveys a broad range of hedge fund and proprietary trading strategies with an emphasis on understanding their fundamental investment process. Students will gain practical knowledge in regards to creating, back-testing, and implementing such trading strategies. There will be particular focus on the theoretical justification for the existence of inefficiencies or risk premium and the successful extraction of them. The first part of this course will cover the gambit of popular hedge funds strategies such as Long/Short, Event Driven (Distressed, Risk-Arbitrage), Equity Market Neutral, Statistical Arbitrage, Dedicated Short-Bias, Convertible Arbitrage, Emerging Markets, Fixed Income Arbitrage, Global Macro, Managed Futures, and Multi-Strategy. Particular attention will be placed on understanding the mechanics of the alpha-extraction methodology. An example of the type of question that will be addressed in this course is: What do hedge fund managers strive to capture and how do they do it? Close attention to the hidden-risks and limitations associated with the implementation of such strategies will be highlighted throughout this course. Upon successful completion of this course, students should
gain a firm understanding of the popular hedge fund and proprietary trading strategies currently employed in the industry.

This course is presented from a practitioner's perspective and will assume students have knowledge of basic financial theory, portfolio construction, arbitrage concepts, return calculations, statistics, and knowledge of basic cash and derivative products. The class project will be highly quantitative and will require that students be able to analyze and manipulate market data using statistical and mathematical modeling techniques.

**Grading**

The course grade will be comprised of the group project (70%) and class participation (30%).

**Group Project**

Students will form groups of 4-5 members and create a hedge fund strategy. The hedge fund strategy must:

1. Have supporting investment documentation: (1) the investment thesis/idea, (2) back-tested data results/support, (3) survey of investment opportunity, and (4) a summary of any prior academic works. Several ideas for strategies are below, but students are highly encouraged to come up with their own ideas.

2. Be submitted in a written report and be presented to the class (10 minute time limit) on the last day of class.

Groups must study the economic rationale behind the strategy (what property of the market makes it inefficient in a way that you can exploit?), weigh and criticize the relevant evidence from the academic literature (if any), the strategy’s past returns using historical data, estimate the associated transactions costs and use of capital (margin), and describe its success (or failure) using several performance measures. The group project is due Oct. 27th.

**Guest Lecturers**

Guest lecturers will be invited to provide in-depth analysis of current strategies throughout the class sessions. These guests will be seasoned professionals currently working in the hedge fund industry. They will provide insight on the current development of the industry, as well as current best-practices on strategy implementation.
**Tentative Session Outline**

(1) **Introduction and the Basics of Strategy Development** (Wed., Sept 22)

a. General background on origins of hedge funds
b. Taxonomy of strategies
   i. Convertible Arbitrage: long converts, hedge equity, credit, fixed income; gamma, busted, high-money
   ii. Dedicated Short-bias: identifying frauds, forensic accounting, e.g. Fraud Discovery Institute, CitronResearch.com
   iii. Emerging Markets: emerging stock selection, country selection, currencies
   iv. Equity Market Neutral: Fama-French factors, B/M, size, P/E, momentum, reversals, accruals
   v. Statistical Arbitrage: convergence trades, pairs trading, high frequency trading, index arbitrage, etf arb, co-integration, OU process
   vi. Event Driven: mergers (cash, stock for stock, cash and/or stock, collars); distressed; carve outs; spinoffs, mortgage; CDS-bond basis, on-the-run/off-the-run, duration neutral
   vii. Fixed Income Arb: swap spread, yield curve, butterfly, mortgage; CDS-bond basis, on-the-run/off-the-run, duration neutral
   viii. Global Macro: real economy, carry trade (uncovered interest parity), devaluation, thematic, yield curve, country selection, tactical asset allocation
   ix. Long/Short Equity: bottom-ups Buffet-style, value, growth, earnings quality, management quality, industry rotations, sector specialists
   x. Managed Futures: trends, counter trends, overextended trends
   xi. Multi-Strategy: several different styles in one fund

c. Performance Measures (Sharpe Ratio, max drawdown, hit ratio, others)
d. Strategy Development Components (data requirement, alpha design, portfolio construction, execution, diagnostic tests)
e. Back-Testing (inadvertent cheat, abusive execution assumptions)
f. Common Mistakes in the Search for Alpha
g. Limits of Arbitrage

**Required Readings:**

**Optional Background Reading:**

(2) Equity Strategies / Mean-Reversion

a. Landscape/Players (Long/Short vs EMN vs Stat Arb)
b. Valuable-Investor Insights: 13-F insight into portfolio holdings (sec.gov)
c. Common Alpha sources, extraction procedures, construction
d. EMN: building factors for investment and risk management Barra, Northfield, APT
e. The Killer-Quants: basic Stat Arb strategies mean-reversion, pairs, co-integration
f. Execution Challenges and Realities
g. Historical Performance

Required Readings:

Optional Background Readings:

(3) Futures Strategies / Momentum

a. Landscape/Players (Turtles, medium-long term trends vs Intra-day strategies)
b. Global liquid futures markets
c. “The trend is your friend,” how to a build simple model? (MACD, RSI)
d. Micro-structure issues, t-costs, the forward curve, open interest and volume
e. Indices: GSCI, CRB, Roger
f. Historical Performance

Required Readings:

(4) Currency / Global Macro Strategies (Oct. 13th)

a. Landscape/Players/Products
b. Theoretical background (PPP, covered/uncovered parity)
c. Portfolio construction
d. “Carry-Me-Out”, which short-term interest rates to employ?
e. Majors and minors
   i. Intra-day mean reversion
   ii. How to create a FX-Carry Index?
f. Historical Performance and Risk Profile

Required Readings:

Optional Background Readings:

(5) Event Driven / Convertible Arbitrage Strategies (Oct. 20th)

a. Landscape/Players/Products (MERFX)
b. Merger Deal Space (ArbitrageView.com)
c. Merger Arbitrage (cash, stock for stock, etc.)
   i. How to create a Merger Arb Index with 13Fs?
d. Historical Performance and Risk Profile

Required Readings:

Optional Background Readings:

(6) Presentation of Group Projects (Oct. 27th)
Ideas For Group Project

1. Momentum vs Mean-Reversion / Trend vs Counter-Trend:

   Study the profits of momentum (trend) or reversals (counter-trend) in equity, industries, commodities, FX, or other markets. See papers in class 2. There are many others, e.g. Chan, Jegadeesh, and Lakonishok (1996), “Momentum Strategies,” The Journal of Finance, vol. 51, no. 5., pp. 1681-1713.

2. Value investing or HML, size investing SMB:

   Quantitative Strategies based on well-known factors:
   a. A valuation ratio (B/M, P/E, etc.)
   b. Analysts expectations, changes in earnings, growth, ratings
   c. Net stock issues, corporate actions, spin-offs, split-offs
   d. Accruals, re-statements, fraud, new jets

3. Convertible bond arbitrage:

   Get data on convertible bond prices and stock prices of the same companies and implement a back-test of the strategy. See also Agarwal, Fung, Loon, and Naik, “Risk and Return in Convertible Arbitrage: Evidence from the Convertible Bond Market,” working paper.

4. Carry-trade:

   Get data on interest rates (BBG-BBA) and exchange rates (oanda.com) for a number of countries and consider the return on the carry trade. Is the risk symmetric, i.e. equal size of upside and downside returns?

5. Pairs-trading:


6. Swap spread arbitrage:

   Profit from the difference between two virtually risk free rates, the Treasury rate and the swap rate. See Duarte, Longstaff, and Yu (2005), “Risk and Return in Fixed Income Arbitrage: Nickels in Front of a Steamroller?,” working paper.

7. Yield curve arbitrage:
Make a strategy of risk free securities of various maturities. See Duarte, Longstaff, and Yu (2005) as above.

8. **Excess volatility:**


9. **(Shorting) Index options:**

Consider index option strategies, such as selling at the money straddles. When is the strategy most profitable? See e.g. Amin, Coval, and Seyhun (2004), “Demand for Portfolio Insurance and Index Option Prices,” Journal of Business 77, no. 4.

10. **Earnings announcement drift:**


11. **Distressed investing**

How do you identify opportunities among distressed bonds? How to evaluate default risk and recovery in case of default? Can bond holders be active investors? What is return to a diversified portfolio of distressed bonds (i.e. with no attempt of security selection) and does this capture most of the risk premium?

12. **Dedicated short bias**

How can you identify short-selling ideas? Are there ways of identifying frauds or does forensic accounting help? Is certain behavior of management a tell-tale sign of trouble?

13. **Emerging markets**

How do some of the investment strategies mentioned above work in emerging markets? What special considerations (e.g. costs, barriers, and risks) must be taken into account when investing in emerging markets? What are the special opportunities? How much of emerging market hedge fund returns can be explained by simply being long emerging market equity indices?

14. **Selecting hedge funds building a FOFs**
How do you select hedge funds? How should you analyze return data, and what other data is available (e.g. 13F, 13D, etc.), and how can this be used to cross-validate managers? How do you combine hedge funds into a portfolio? What is the best way to allocate capital across styles?

15. Dual-Listed Companies (DLCs)