Statistical Arbitrage (FE537)

1st Fall, 2014

Professor : Jung-Soon Hyun

Teaching Assistants: Woon Jun Sung, S484

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Office Hour : Thur. 2-3:30 PM

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1. Required Text

Ernest P. Chan, Algorithmic Trading, 2013, Wiley

2. Recommended Text

Andrew Pole, Statistical Arbitrage, 2007, John Wiley & Sons, Inc.

3. Course Description

The objective of this course is to understand statistical models of stock returns and to implement trading strategies in cash and derivatives markets using properties of statistical models. They are sometimes known as algorithmic trading strategies. Reading materials are given in class. There is final exam and 1 project which is performed by group. To conduct the project, MATLAB coding ability may be needed.

4. Grade Composition

The grade will be determined according to the following tentative weighting scheme.

- Class participant 10%
- Project 40%
- Final Exam 50%

5. Project

The project is to be done in groups of two to three students. You are responsible for forming your own groups. The project will be given in class and one of your groups should present your last homework at the end of course. Project will deal with real data and it will involve programming and quantitative financial analysis as well as your contribution to and interpretation of the theory presented.

6. Reading Lists

- Merton H Miller, Jayaram Muthuswamy, and Robert E. Whaley, 1994, Mean reversion of Standard $ Poor's 500 Index Basis Changes: Arbitrage-induced or Statistical Illusion?, *Journal of Finance* 49, 479-513

- Mark Mitchell, Todd Pulvino, and Eric Stafford, 2002, Limited Arbitrage in Equity Markets, *Journal of Finance* 57, 551-584

- Robert J. Elliot, John Van Der Hoek, and William P. Malcom, 2003, Pair Trading, *Quantitative Finance* 5, 271-276

- Steve Hogan, Robert Jarrow, Melvyn Teo and Mitch Warachka, 2004, Testing market efficiency using statistical arbitrage with applications to momentum and value strategies, *Journal of Financial Economics* 73, 525-565

- Evan Gatev, William N. Getzmann, K. Geert Rouwenhorst, 2006, Pair Trading: Performance of a Relative-Value Arbitrage Rule, 2006, *Review of Finance* 19, 797-827

- Fan Yu, 2006, How Profitable Is Capital Structure Arbitrage? 2006, *Financial Analyst Journal* 62, 47-62

- Robert Fernholz and Cary Maguire, Jr, 2007, The Statistics of Statistical Arbitrage, *Financial Analyst Journal* 63, 46-52

- Giovanni Montana, Kostas Triantafyllopoulos, Theodoros Tsagaris, 2009, Flexible least squares

for temporal data mining and statistical arbitrage, *Expert Systems with Applications36*, 2819-2830

- Marco Avellaneda and Jeong-Hyun Lee, 2010, Statistical arbitrage in the US equity market, *Quantitative Finance* 10, 761-782

7. Tentative Course Schedule

Class	Lecture	reference
9/2	Statistical arbitrage (SA) – theoretical view	article
9/4	Basics of mean-reversion	Chapter 2
9/9	No class – Thanksgiving Holliday	
9/11	Basics of mean-reversion	Chapter 2
9/16	Implementing strategy	Chapter 3
9/18	Implementing strategy	Chapter 3
9/23	Stocks and ETF	Chapter 4
9/25	Stocks and ETF	Chapter 4
9/30	Currency and Futures	Chapter 5
10/2	Currency and Futures	Chapter 5
10/7	Momentum	Due of proposal
10/9	No class - Hangul Proclamation Day	
10/14	Momentum	Chapter 7
10/16	Project presentation	
Last week	Final exam	