Investment Strategies 2

MAF, Module 2, 2020-2021

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Course information

Course Website: https://my.nes.ru

Instructor's Office Hours: by assignment

TAs: n/a

Course description

This course covers a broad range of topics related to investment strategies. The course is very applied and focuses on the technical side of the subject. It heavily uses Python for strategies development and backtesting, and data manipulation.

- The first part of the course starts with an introduction to behavioral finance and market inefficiency. Then we will make a general overview of trading strategies and discuss their quantitative metrics. Later we will learn how to develop and backtest strategies using various Python tools.

- The second part is devoted to provide some cases in quantitative research and trading. It will cover different asset classes with special focus on equities and strategies types as well as different approaches to portfolio formation, risk management, asset classification and machine learning applications on financial data.

Course requirements, grading, and attendance policies

Prerequisites:
1. Python
2. An introductory finance course

Grading:

1 homework problem set	**15%**
Project 1	**35%**
Project 2	**25%**
Case	**25%**

Course contents

- **Overview of Behavioral Finance**

- **Overview of investment strategies**

- **Trading Strategies Basics:** strategy design, backtesting, performance metrics

- **Python for strategy backtesting**: strategy development, data analysis and manipulation using pandas

- **FX Trading strategies**: carry trade with momentum and reversal enhancement

- **Quantopian**: backtesting equity trading strategies

- **Financial data**: overview of contemporary quant trading ecosystem

- **Strategies testing** and machine learning: how to avoid overfitting

- **Risk management**, assets classification, structure extraction

- **Optimal execution** and transactions cost estimation

- **Equities trading strategies:** framework for strategies development

Description of course methodology
- Lectures
- Homeworks
- Project

Sample tasks for course evaluation

Pair trading:
Find a pair of US equity P and Q, which prices satisfies cointegration.
Consider historical time interval from one to three years.

Course materials

Textbooks and materials

○ Lecture notes
○ John Hull, "Options, Futures, and Other Derivatives", 9th edition.
○ Edwin Lefevre. Reminiscences of a Stock Operator
○ Avellaneda and Lee (2009), "Statistical Arbitrage in the U.S. Equity Market," NYU Courant.
○ E.P. Chan's "Quantitative Trading" (2009)

Academic **integrity policy**

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.