Date:2016/10/13 Team3

Team arrangement:

Divide the team into 2 sub-team, working on exercise separately and communicate discovering regularly.

Add a meeting on Monday from 6:30pm every week.

Work breakdown

|  |  |  |  |
| --- | --- | --- | --- |
| Wei Wang |  | Coding | design presentation and report |
| Fangzheng Hu | background research and strategy ideas | Coding |  |
| Jing Xie | background research and strategy ideas |  |  |
| Jue Wang |  |  | design presentation and report |

Planning

|  |  |  |
| --- | --- | --- |
| 1 | PASSED |  |
| 2 | PASSED |  |
| 3 | Determine rough strategy based on sample strategy,  Start doing exercise |  |
| 4 | Accomplish exercise  Optimise strategy |  |
| 5 | Start report writing  Optimise strategy |  |
| 6 | Report writing  Optimise strategy |  |
| 7 | Report writing  Optimise strategy |  |
| 8  DDL: **12:00 Thursday 17 November** | Final draft Polish report |  |
| 9  DDL: To be continues | Presentation |  |

Exercise breakdown:

Exercises

1. **Integrated Development Environment (IDE).** Experiment with the backtester in the [RStudio](http://rstudio.org/) IDE, which is available in the labs and freely available for download for home use (on Windows, Mac, or Linux).
2. **Revision control.** Setup a shared [Dropbox](http://www.dropbox.com/) folder, or a [Bitbucket](http://www.bitbucket.org/) team to share your source code.

[FANGZHENG]

1. **Use limit orders.** Several of the example strategies like rsi\_contrarian.R and bbands\_contrarian.R currently use market orders. Extend them to use limit orders. You will need to decide what to use as the limit prices. [FANGZHENG]
2. **Use volume data**. You are given volume as well a price data. Investigate strategies that incorporate this too. [FANGZHENG]
3. **Position sizing**. The series have different price levels and different price volatilities. Investigate methods to choose position sizes across the series so as to avoid unintended dominance of the trading results of any one series. See Lecture 4 for some ideas. [FANGZHENG]
4. **Designing a pair trading strategy**. Design a trading strategy that given a pair of instruments will trade when the prices of the two instruments diverges relative to the historical spread between them. In this scenario buy the relatively cheap instrument and sell the relatively expensive one. Close the trade when the prices converge. Apply you strategy to some of the cointegrated pairs that you found in the previous exercise. [FANGZHENG]

[WEI]

1. **Extend the store**. In the two example strategies that use the store, it so far only contains the current iteration and the history of close prices. Extend one of these strategies to also store a window of all price data and volume data (not just the close). [WEI]
2. **Use open/high/low data**. Investigate and implement strategies that also use the open, high, and low prices as well as the close. [WEI]
3. **Proportion of time in the market**. The evaluation of trading strategies (Assessment 2) will give some marks for taking postions. That is, a strategy should be active enough. The backtest method in backtester.R computes this for you and returns it (and it is printed at the top of the ggplot2 chart). On some simple strategies monitor the proportion of time in the market as you vary strategy parameters. [WEI]
4. **Correlation of returns**. Compute the correlation between the trading strategy returns of the same trading strategy applied to two different series. Investigate how the correlation of returns of the underlying series relates to correlation of returns for the trading strategies that trade them. [WEI]
5. **Finding a cointegrated pair**. Using the checkPair() function in [this](https://www2.csc.liv.ac.uk/~rahul/teaching/comp396/meanrev.html#meanrev) code, search for pairs of cointegrated series among the 10 series you have been given. [WEI]

BOTH:

**Understand the example strategies.** Make sure you understand all the example strategies. It can be very instructive to develop minor adjustments of the strategies and then implement these adjustments. to share your source code. [BOTH]

**Existing indicators**. Investigate the indicators in the TTR package, study their definition and source code. Using some of these indicators develop trading strategies and investigate their performance. [BOTH]

**Optimization of parameters**. Adapt the file main\_optimize.R to work on strategies other than bbands\_contrarian.R. [BOTH]

**Producing a trading strategy evaluation report**. Using only R code, produce a PDF evaluation report for a trading strategy. Things you might include are: results of in-sample parameter optimization, sample equity curves for in-sample and out-of-sample performance, summary of performance measures for in-sample and out-of-sample performance, results of robustness tests. [BOTH]

**Producing a portfolio-level evaluation report**. Extend the previous exercise by producing an evaluation report for multiple trading strategies and series. [BOTH]

Literature review: