Backtester Project

By Anjisht Gosain

# Code Structure

I have implemented my solution in the TradingStrategyBacktesting Python solution. This is composed of the following Python projects:

* TradingStrategies : contains the long-short trading strategy. The code generates long and short signals for each security based on the selected trading strategy. The main strategy is called LongBestShortWorst, which inherits from the IPortfolio generic interface.
* PortfolioConstruction : contains the code which determines the security weightings in the portfolio, and handles rebalancing. The main portfolio constructor is DollarNeutralEqualWeightPortfolio, which constructs a dollar neutral portfolio with equal weights for each security which was identified for investment from LongBestShortWorst. Returns and turnover calculations are done within the PortfolioConstruction classes.
* Common : a set of enumerations to aid with code readability.
* BacktestingEngine : reads in and cleans the data, and then loops through each historical date in the backtest.
* BacktestingRunner : a simple runner for calling the BacktestingEninge.
* BacktestingUnitTests : some basic unit tests to confirm to correctness of some of the Python models.

# Python Packages and Development Environment

The Python solution was developed in Visual Studio, using Anaconda distribution 5.2.0 (Python 3.6, 64-bit). Please let me know if there are any issues running on other IDE’s.

# Assumptions and Method

* The forward return for security i on date t is equal to the backward return for security i on date t + 1. There are some dates where forward returns were not recorded for any security. The corresponding backward return was used in backtesting for these dates.
* The trading strategies have already been devised. Hence, the whole time period was used as the out- of-sample test set. An implementation of the in-sample test is thus not provided.
* If factor data for a security was missing on a specific date, then that security was considered outside of the universe of possible investments. On these dates the number of long and short was adjusted accordingly.
* It was assumed that the provided returns were arithmetic rather than geometric.

More verbose commentary on the method can be found within the code.