MC2-Project-2

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Time Period and Stock for Testing

We will use IBM and trade it from December 31, 2007 until December 31, 2009.

Part 1A: Bollinger Band Strategy Chart (15%)

A basic Bollinger Band trading strategy works as follows: There are two potential entries, long and short. The long entry is made when the price transitions from below the lower band to above the lower band. This indicates that the stock price has moved substantially away from the moving average, but is now moving back towards the moving average. When this entry signal criteria is met, buy the stock and hold it until the exit. The exit signal occurs when the price moves from below the SMA to above it.

The short entry and exit are mirrors of the long entry and exit: The short entry is made when the price transitions from above the upper band to below the upper band. This indicates that the stock price has moved substantially away from the moving average, but is now moving back towards the moving average. When this entry signal criteria is met, short the stock and hold it until the exit. The exit signal occurs when the price moves from above the SMA to below it.
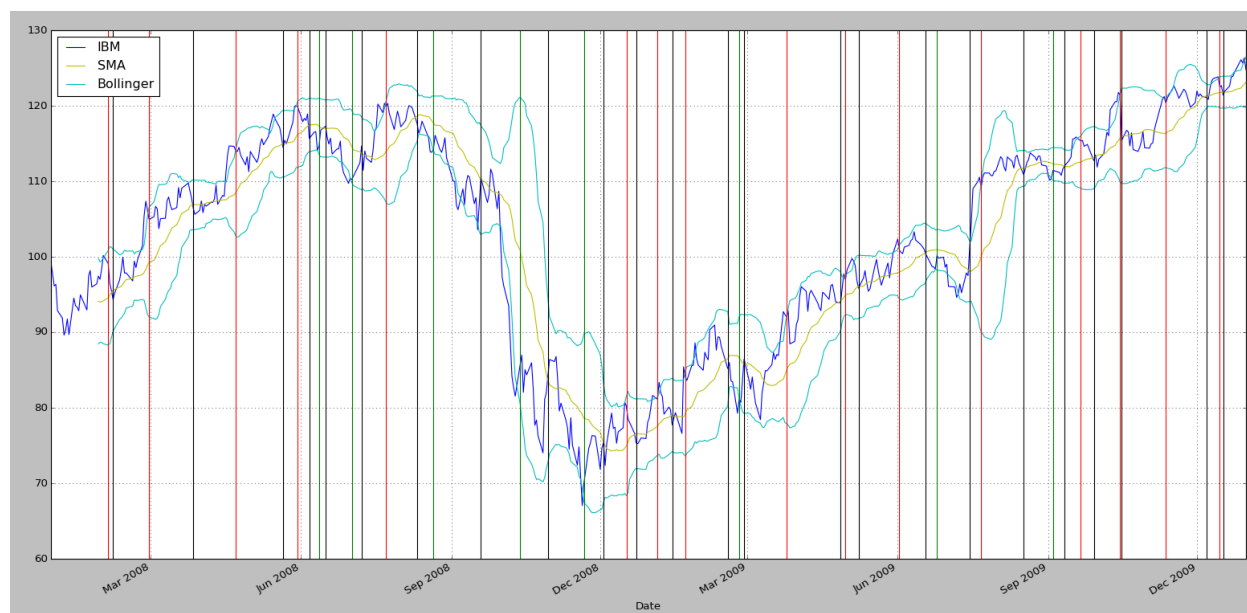

Figure 1. Bollinger Band strategy chart. Blue: Stock price (adjusted close); Yellow: SMA20; Cyan: Upper Band and Lower Band; Vertical green line: Long entries; Vertical black line: Long exits and Short exits; Vertical red line: Short entries.
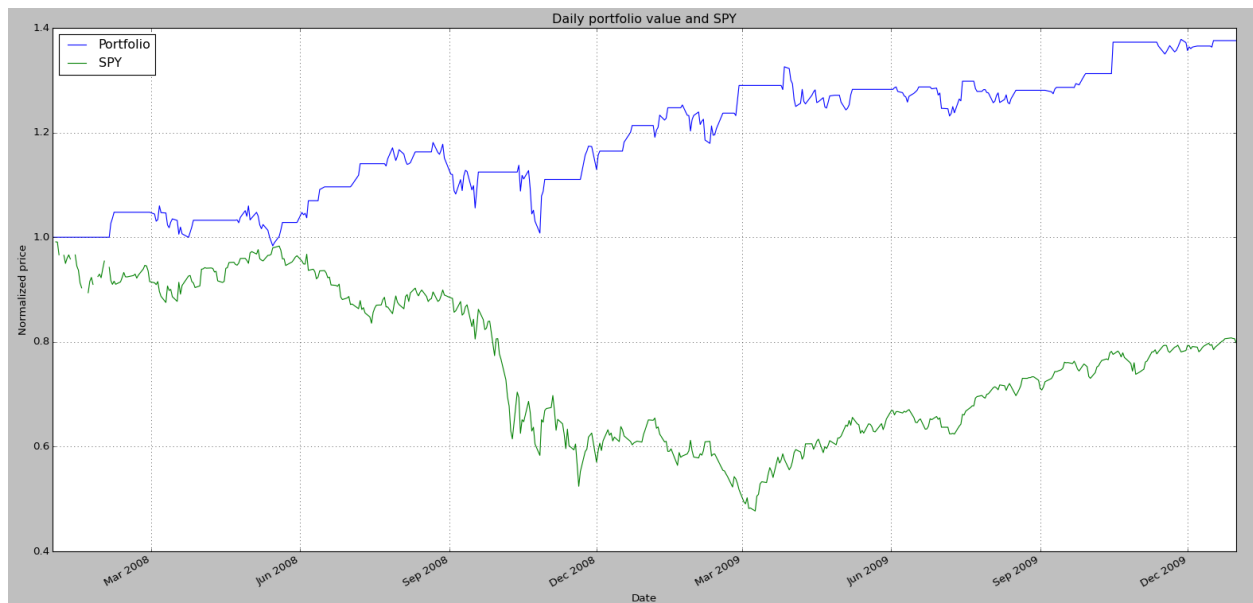
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Figure 2. Bollinger Band strategy backtest chart. Blue: portfolio; Green: SPY benchmark.

Summary of Bollinger Band backtest performance metrics

Data Range: 2007-12-31 to 2009-12-31

Sharpe Ratio of Fund: 1.03642910415
Sharpe Ratio of SPY: -0.149575888341

Cumulative Return of Fund: 0.3757
Cumulative Return of SPY: -0.201395139514

Standard Deviation of Fund: 0.0102531834697
Standard Deviation of SPY: 0.0219136847778

Average Daily Return of Fund: 0.000669419036332
Average Daily Return of SPY: -0.000206479400499

Final Portfolio Value: 13757.0

First few trades:

2008-02-04,IBM,SELL,100

2008-02-07,IBM,BUY,100
2008-02-29,IBM,SELL,100
2008-03-27,IBM,BUY,100
2008-04-22,IBM,SELL,100
2008-05-21,IBM,BUY,100

Part 2: Your Strategy (70%)

I used a strategy similar to MACD. In this strategy, I use SMA12 as the fast trend line of the stock price and SMA26 as the slow trend line of the stock price.

A long entry point is when the fast line crosses the slow line upwardly and during the last three days, the fast line has to be lower than the slow line. The long exit is when the fast line touches the slow line downwardly.

A short entry point is when the fast line crossed the slow line downwardly and during the last three days, the fast line has to be higher than the slow line. The short exit is when the fast trend touched the slow trend line upwardly.

In the strategy chart, you cannot see the exit lines because they are always overlapped by the entries.
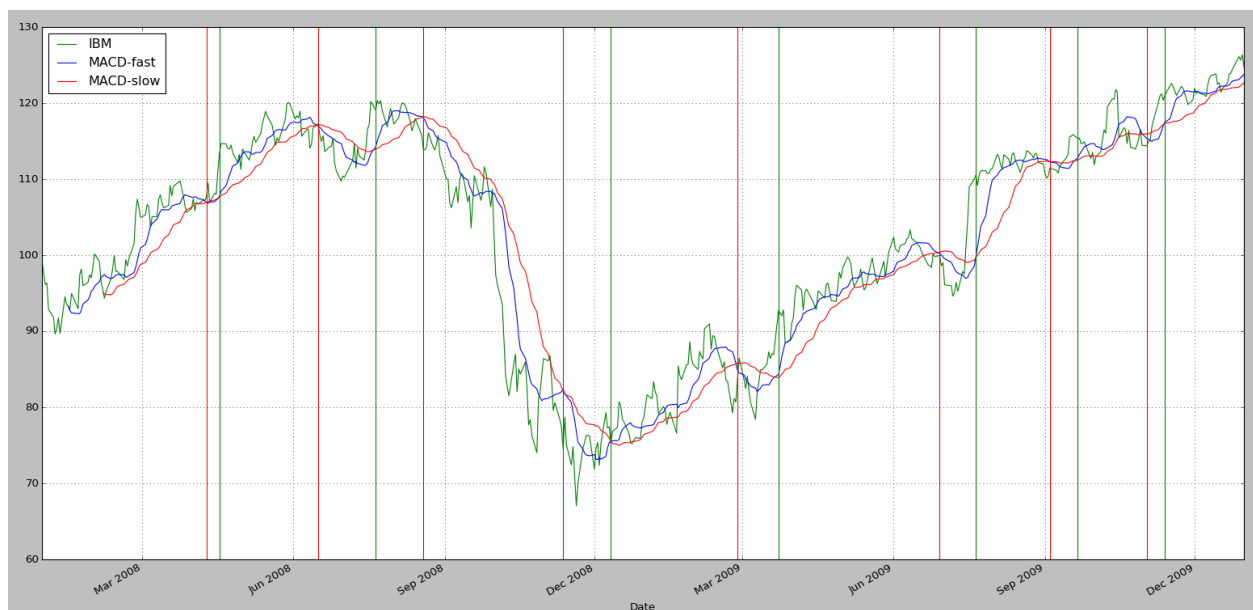

Figure 3. My strategy chart. Green: Stock price (adjusted close); Blue: SMA12; Red: SMA26; Vertical green line: Long entries; Vertical red line: Short entries.
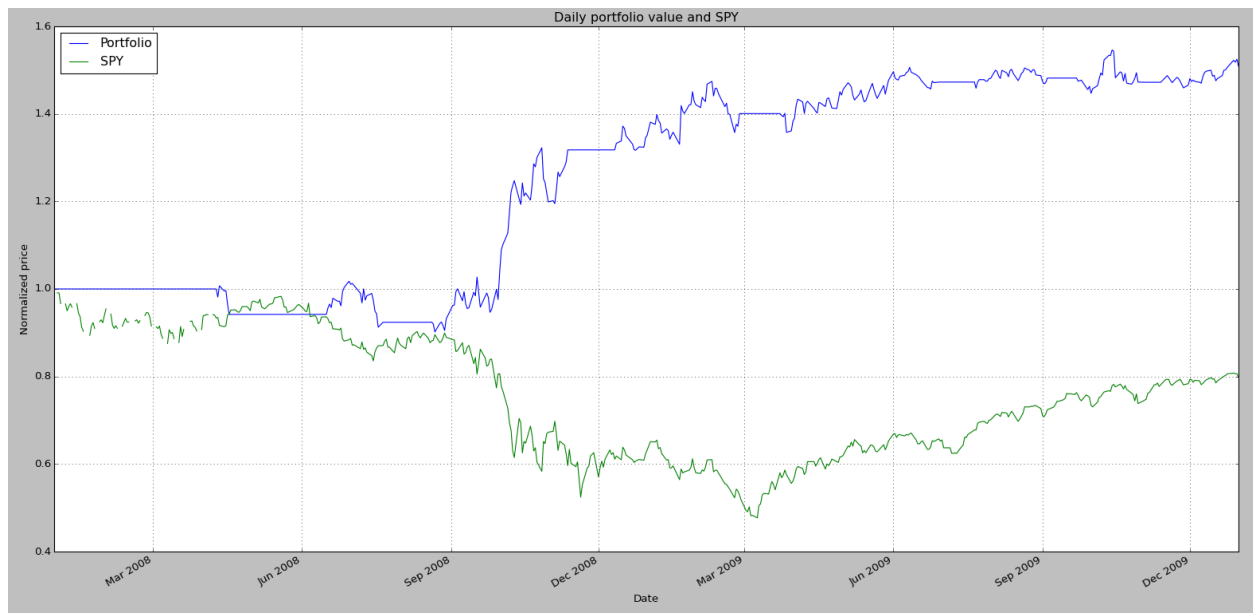
Figure 4. My strategy backtest chart. Blue: portfolio; Green: SPY benchmark.

Analysis

My strategy outperforms SPY benchmark by 70%. Overall SPY dropped 20% and my cum return is 50.9%. My sharpo ratio is also much bigger than SPY. Comparing to Bollinger band strategy, my strategy generates 13% higher return with a better sharpe ratio.

Basically this strategy can catch a big up or down-trend, but for a pig market, it may be worst than the Bollinger one.

Summary of My backtest performance metrics

Data Range: 2007-12-31 to 2009-12-31

Sharpe Ratio of Fund: 1.11566716343
Sharpe Ratio of SPY: -0.149575888341

Cumulative Return of Fund: 0.5091
Cumulative Return of SPY: -0.201395139514

Standard Deviation of Fund: 0.0119076278178
Standard Deviation of SPY: 0.0219136847778

Average Daily Return of Fund: 0.00083687314671

Average Daily Return of SPY: -0.000206479400499

Final Portfolio Value: 15091.0

First few trades:

2008-04-09,IBM,SELL,100
2008-04-17,IBM,BUY,100
2008-06-16,IBM,SELL,100
2008-07-21,IBM,BUY,100
2008-08-19,IBM,SELL,100
2008-11-12,IBM,BUY,100
2008-12-11,IBM,BUY,100
2009-02-26,IBM,SELL,100
2009-03-23,IBM,BUY,100
2009-06-29,IBM,SELL,100
2009-07-21,IBM,BUY,100
2009-09-04,IBM,SELL,100
2009-09-21,IBM,BUY,100
2009-11-02,IBM,SELL,100
2009-11-13,IBM,BUY,100