Adaptive Mixture of Experts: Drilling down on the FedEx model's performance

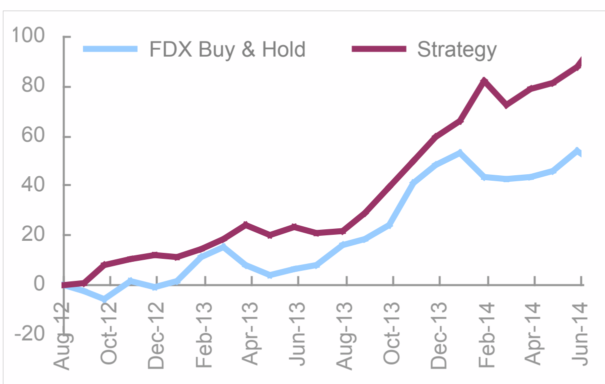
June 7, 2014

Overview

This is a follow up to our previous report on AME applied to FedEx (FDX).

The graph below shows the real-time returns updated compared to the Buy & Hold benchmark. It is clear that the strategy continued its strong pace; it has outperformed its benchmark since inception, returning +54.3% annualized as of yesterday versus +31.8%.

Days correct: 63%, Return: +54.3%, W/L: 1.27



For more detailed results

It is expected that static models go through periods of underperforming their benchmark, especially when the benchmark is strong as it is the case with FedEx. We did not see that happening with AME.

So, nothing to worry about but we think it is still a worthwhile exercise to drill down on where AME has done well, and not so well, and where it could be better.

Key takeaways

- You have probably read about adaptive trading strategies that are capable of "learning" from the markets. AME takes this approach and so far has done a good job adjusting to changing markets.

- The benefit of using AME has been in improving returns relative to volatility. YTD performance has run in line with the historical back-test.

54.3%

Annual Return on FedEx Corporation (FDX)

Chart Description

Chart Name AME #100 Setting FDX
The chart was released August 6, 2012 as part of the Noxa-AME package

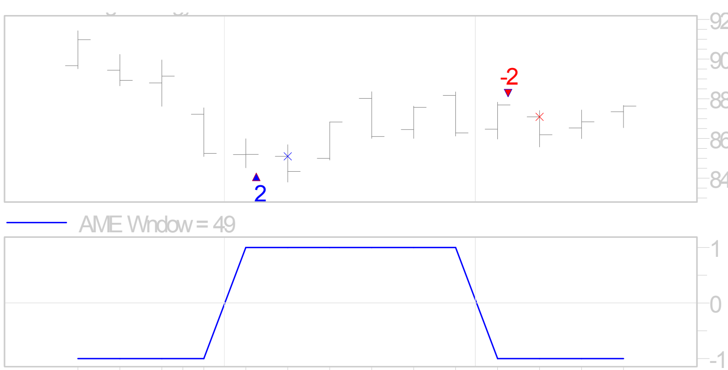
Platform NeuroShell Daytrader®

Instrument FedEx Corporation (FDX) NYSE

Type Volatility

Position Sizing Fixed Size: Shares/Contracts = 1

Figure 1 | Strategy rules



> Go Long at the next available Open if AME of Close crosses over above the zero line. Window parameter is set to 49
>
> Go Short at the next available Open if AME of Close crosses over below the zero line. Window parameter is set to 49

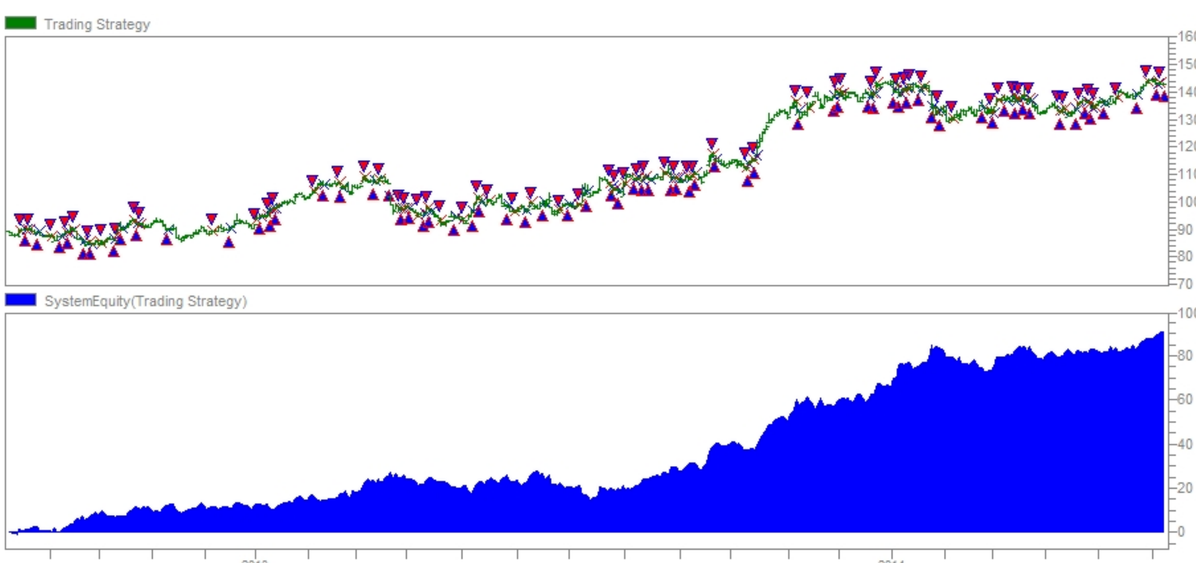
For the number lovers *

Start Date = / End Date =	Paper Trading 11/24/2006 – 8/3/2012	Trading 8/6/2012 – 8/29/2013	Trading 8/6/2012 – 6/6/2014
Annual Return on Account	35.0%	30.3%	**54.3%**
% Profitable Trades	60.4%	58.7%	**63%**
Ratio Gross Profit/Loss	1.89	1.64	**2.16**
Ratio Avg Win/Avg Loss	1.24	1.16	**1.27**
Number of Trades	369	75	**135**
Average Trade Span	4 bars	5 bars	**4 bars**

* Those results do not account for transaction costs but because of how infrequently the model trades, transaction costs are minimal assuming a decent sized account.

Note that the trading rules and parameter values are kept unchanged which means that the results are given "Out-Of-Sample" (OOS).

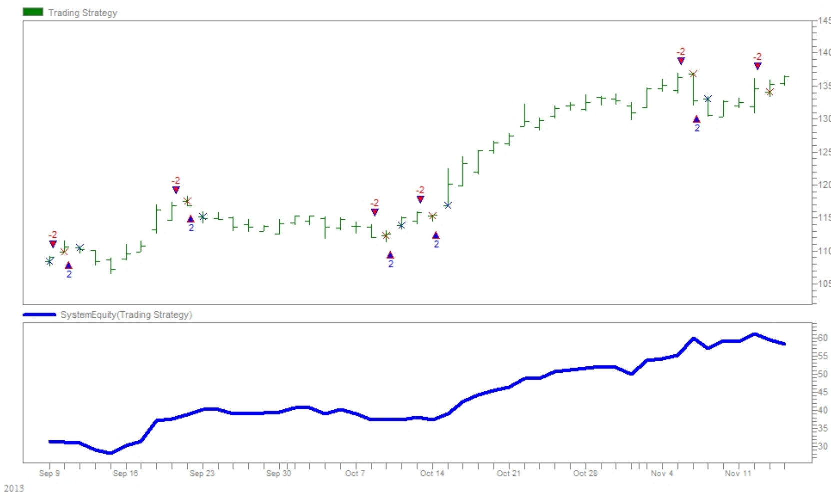
Performance Chart



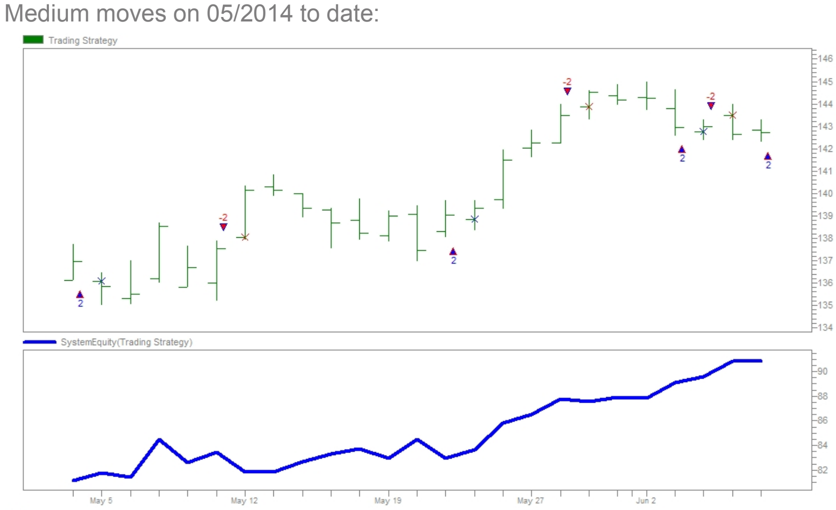
Things AME has done well; up/down moves

Most noticeable, AME has had a good handle on the up/down moves the stock has experienced. Those trades have done well, capturing most of the returns. Zooming in on some of some of those trades:

Prolonged up/down moves:



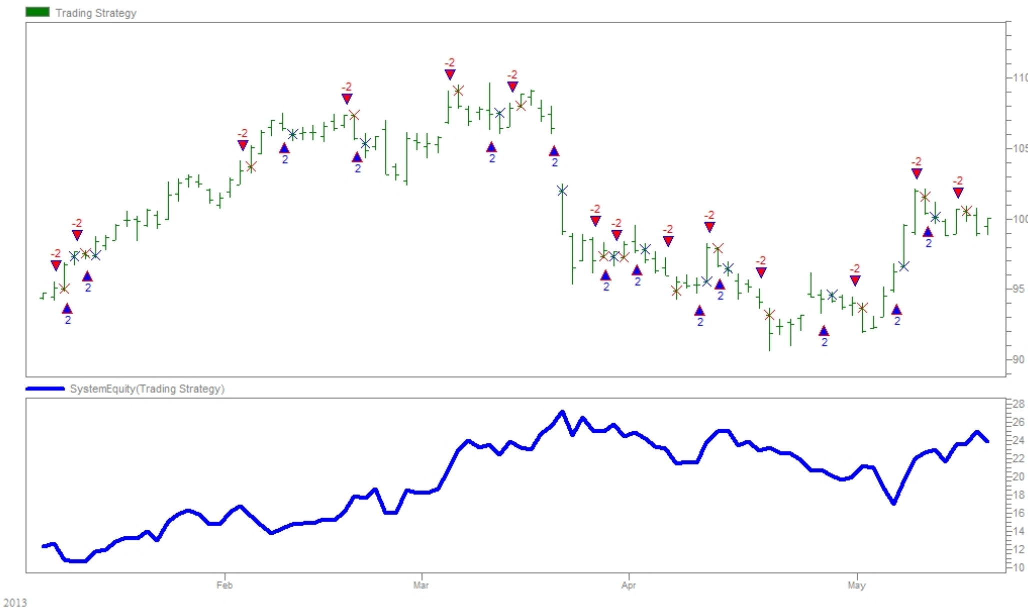
Medium moves on 05/2014 to date:



We are dealing with a relative number of trades (139 to be exact), so take these results with a hefty dose of skepticism, but this observation has been consistent and in line with the historical back-test to justify the trades.

Things AME has not done so well; gaps down

Historically, the stock has been prone to sharp down gaps. After a long period of gains, it tends to gap down 4% of more.



The graph above shows when the stock has dropped 6% in March 20th, 2013. As you can see, the gap made it difficult for AME to extract more profits than losses during the period that follows. Personally speaking, we don't even think that is possible to do a good job capturing enough of the returns after such a gap

So the fix is not to try to predict when the stock is going to make a sharp drop and what it will do next. The fix is to move to cash after the stock has gapped far beyond normal ranges and accept that AME might not be fully suited after that very abnormal moment.

We are happy with this solution because it implicitly keeps the strategy out of a prolonged market crash. Of course, we still bear the risk of a single gap-down, but that is the implicit risk of any strategy that takes non-hedged positions in the market and a risk for which we are usually greatly rewarded.