ATS RESEARCH

Analyzing Trade Level Statistics To Identify The Best Entry & Exit Signals in the ATS Portfolio: Part I

ATS Research

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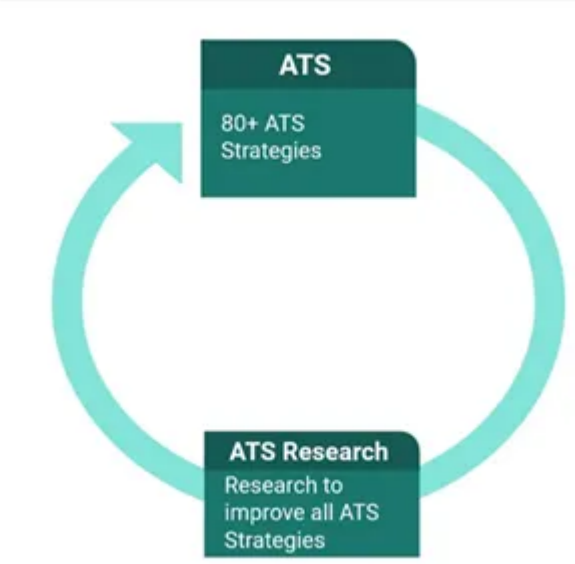
Important: *There is no guarantee that these strategies will have the same performance in the future. I use backtests to compare historical strategy performance. Backtests are based on historical data,* ***not real-time data*** *so the results shared are hypothetical, not real. Even with forward tests, there is no guarantee that performance will continue in the future. Trading futures is extremely risky. If you trade futures live,* ***be prepared to lose your entire account.*** *I recommend using these strategies in simulated trading until you/we find the holy grail of trade strategy.*

Housekeeping:

As a quick reminder, the goal of ATS Research is to add value to strategies in ATS and the goal of ATS is to find the holy grail of automated trade strategy.



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IMPORTANT: All strategies will be removed from ATS Research on May 15. You will only be able to access strategies on ATS after May 15.

My training did not begin in trading. Like most schools, trading was not a course offering. The closest I could get was finance. If you show a trader your MBA as a testament to your ability, they will laugh at you. The only thing that defines your ability is your account size.

I lucked up in my career in trading by participating in a rotational banking program that required all corporate bankers to learn capital markets products for deeper sales knowledge. My rotation included financial derivatives, in particular FX. It was a coveted rotation.

Prior to that rotation, I was placed in the food and beverage group. I knew my work had be stellar to get the FX rotation. That's when I reached out to a mentor and he suggested the Dupont Analysis. It's an old equation that deconstructs Return on Equity (ROE) into three parts: profitability (net profit margin), efficiency (asset turnover), and leverage (equity multiplier) like so:

$$\text{DuPont Analysis} = \frac{\text{Net Income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Shareholders' Equity}}$$

The equation can be further broken down as follows:

$$\text{DuPont Analysis} = \underbrace{\frac{\text{Net Income}}{\text{Revenue}}}_{\text{Net Profit Margin}} \times \underbrace{\frac{\text{Revenue}}{\text{Average Total Assets}}}_{\text{Asset Turnover}} \times \underbrace{\frac{\text{Average Total Assets}}{\text{Average Shareholders' Equity}}}_{\text{Financial Leverage}}$$

$$\frac{\text{Net Income}}{\cancel{\text{Revenue}}} \times \frac{\cancel{\text{Revenue}}}{\cancel{\text{Average Total Assets}}} \times \frac{\cancel{\text{Average Total Assets}}}{\text{Average Shareholders' Equity}}$$

$$\frac{\text{Net Income}}{\text{Average Shareholders' Equity}}$$

The more you dissect, the more you learn which levers of business need more attention to boost profitability.

I received group recognition for introducing the equation into the credit risk framework and secured my seat on the FX derivatives floor. Twenty years later, I'm a full-time trader with a dream of sharing this incredible profession with as many people as I can.

In the same way that the DuPont Formula uses ROE, ROA and leverage to find strengths and weaknesses in corporate financial performance, my hope is to use the components of trade profitability (trade efficiency, risk management and execution effectiveness) to create a better strategy via **targeted improvements**.

This is the first post in a series to develop a 'DuPont-like Formula' for automated trading strategies. In Part II, we'll dissect the strategies identified in Part I to create a master strategy with the "best" entry and exit stats. That strategy will be shared on ATS.

Let's get started...

We're going to start with the use of three trade stats: MAE, MFE and ETD

- MAE - Maximum Adverse Excursion: *peak* **potential profitability** during a trade.
- MFE - Maximum Favorable Excursion: *peak* **potential loss** during the trade.
- ETD - End Trade Drawdown: final **loss** from the *peak* value of the trade.

For a deeper understanding of each metric, take a look at Ninjatrader's statistical definition page or click here to read a post I wrote about trade level stats on ATS. Each metric represents a different **leg of the trade** and we're going to use these stats to deconstruct, and then reconstruct, a strategy—hopefully for the better.

In a nutshell, MAE and ETD are the intra-day **trade loss potential**, while MFE is the **trade gain potential**. So on a per trade basis, the game is: minimize potential loss and maximize potential gain. Naturally, you want the trade with the highest potential gain (MFE) and the lowest drawdown (MAE or ETD).

You could look for times/trading conditions when the MAE and ETD are naturally lower, i.e. high volatility, prior to a big economic release, after a big economic release, etc. However, *this research series* is about looking at those strategies with better trade stats in general. It is about **identifying those strategies in the ATS portfolio with the best entry and exit stats.**

What Is An Efficient Trade?

In the same way that a car is more efficient if it uses less energy, a trade strategy is more efficient if it requires less capital to make a profit. The amount of capital it takes to run a trade is captured in the MAE and ETD. Our ability to reduce these amounts can make any strategy more profitable.

I am currently using two different types of trade efficiency ratios in my own research:

- MFE−MAE/ETD
- (MAE / MFE) + (ETD / MFE)

The former you've likely seen before, but not the latter.

The first metric is all about net efficiency and closure. It provides a direct measure of how effectively a trade has been managed from a **net potential** perspective, particularly at the point of closing, focusing on maintaining gains in the face of potential losses. It's about maximizing net gain efficiency relative to end-of-trade conditions.

The second metric is more about risk control and minimization relative to the best outcomes observed. It focuses on the **relative risk** throughout the trade, emphasizing the proportion of adverse and ending losses to potential gains.

Whether it's overall risk throughout the trade lifecycle or the efficiency of the trade's exit in capturing and retaining gains against end of trade risk, both measures can give clues about the comparative performance of different strategies, in particular which strategies have the best performance on entry/exit and what is it that gives them that edge. We've got 80+ strategies to deconstruct. ***Subscribers: scroll to the bottom of this post for a deconstruction of those strategies in the most recent backtest.***

Now let's take a deeper dive into these ratios by looking at the MFE/MAE ratio and the MFE/ETD ratio.

MFE/MAE Ratio

The MFE to MAE ratio is often used to identify trades or strategies that offer high reward relative to the risk taken. A higher MFE to MAE ratio indicates that the potential maximum gain in a trade is greater than the potential maximum loss, suggesting a favorable risk to reward scenario. Naturally, the higher the better.

This is *one* measure we will use to gauge a strategy's risk profile from an entry perspective. Strategies 4, 32, & 80Long all have high ratios so I'm going to take a closer look at the entry signals for these strategies in Part II. We might be able to take a strategy with an inefficient (read: low MFE to MAE ratio) and make it better by applying these entry commands. We might also be able to take the strategy with the best exit stats and blend it with strategies that have the best

entry stats. We could also take the strategy with the highest MFE, and apply a better entry *and* exit command. There are many options.

While the MFE to MAE ratio help to determine the strategy with the best entry stats, the MFE to ETD ratio determines the strategy with the best exit stats.

MFE/ETD

The MFE to ETD ratio measures the maximum potential gain against the drawdown at the trade's closure. It provides insight into the *effectiveness* of the exit strategy. A higher MFE to ETD ratio is generally better, indicating that the maximum favorable profit potential during the trade is greater than the drawdown at the *end* of the trade. This suggests efficient trade management where a significant portion of the potential gains were realized before the trade deteriorated significantly. It is also a good indicator of successful profit-taking strategies.

In general, the higher the ratio, the better the exit strategy is for the trade. Strategies 80long, 76, 15, and 58 have the highest ratios and by extension may have the best exit strategies. In Part II, I'm going to dissect these strategies to create a strategy with the "best" entry and exit stats.

Look for Part II shortly.

Click here for a spreadsheet with trade efficiency metrics from the backtest. I will provide trade efficiency metrics from the forward test in Part 2. I'm hoping those metrics lead us to the same strategies. If not, I'll defer to the strategies identified with the forward test.

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