Week 4: Quantifying Investment Network Accuracy

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# Quantifying Investment Network Accuracy

Numerous media sources are producing day-trading recommendations to an army of untrained traders. Unlike traditional investment bankers, these *personalities* lack scrutiny and fiduciary responsibility to their audience. Without regulatory oversight and third-party auditing, it is impossible to ensure these personalities provide the best information. There are additional risks that the guidance is not generalizable, resulting in substantial financial losses for their subscribers.

## Background Context

The number of retail customers actively day-trading is at an all-time high (Moore, 2020). Three distinct factors have caused this new trend. First, trading firms like Robinhood, Fidelity, and Ameritrade have embraced zero-fee commissions. Next, the Coronavirus pandemic is enabling young professionals to enjoy more flexibility in their schedule. Finally, the significant rise in US equity values since March is promoting speculative buying. While some of these participants are becoming exceedingly wealthy (Langlois, 2021)—these are the edge cases, not the norm. Instead, these untrained investors are more akin to gamblers, and like gambling, often encounter significant losses.

Several organizations are capitalizing on the growing trend by selling day-trading strategies to these novice traders. Their services are available through numerous networks like Reddit, Discord, YouTube, podcasts, and dedicated websites. However, many of these online personalities exist without traditional regulatory oversight. For example, *Karen the Super Trader* was briefly an internet sensation after transforming $10,000 into $105MM (Tasty Trade, 2015). The Security Exchange Commission (SEC) later reported irregularities that delegitimized her brand (Steady Options, 2016).

## Problem Statement

The SEC halted this fraudulent source, but countless more day-trading content providers lack scrutiny. This scenario raises questions about the accuracy and consistency of these trade recommendations. For instance, Tasty Trade releases nearly fifty hours of video every week but does not report cumulative profits and losses. These videos also come with statistical guidance, called the Probability of Profit (PoP), as determined by their research team. Until a third-party auditor reproduces their calculations, it is impossible to confirm they are trustworthy. Another risk exists that their strategies are not generalizable. If the untrained audience blindly follows these suggestions, it could result in substantial financial loss.

## Purpose Statement

Businesses like Tasty Trade need an independent third-party to confirm their guidance is generalizable and accurate. This audit needs to assess the profits and losses of historical trade recommendations from different personalities. Nearly all of these strategies use margin-based leverage, which brings into consideration additional metrics. For example, a winning trade could be prematurely closed due to a margin call. Therefore, the volatility in the performance bond (margin requirement) is of importance.

Official trades come with a Probability of Profit (PoP) metric that expresses the chances of earning money. This figure approximates the odds using the Black-Scholes 1973 option-pricing model. However, more current research finds this approach inaccurate in practice (Srivastava, 2020). If a casino equally misrepresented the chances, then the State’s Gaming Commission issues severe penalties. A similar quality standard needs to exist with this metric as it plays a critical component in financial decisions. That standard needs a historical lens that confirms these dealers use straight dice.

## Data Collection Plan

Day-trading advisors offer various free and paid communications through Really Simple Syndication (RSS), Discord channels, and email, to name a few. Automation can crawl through these previous suggestions to extract the trade’s metadata (see Table 1). The initial investigation focuses on Tasty Trade’s official channels, as it has numerous examples and uses schematized publications.

Table 1: Collection Properties

|  |  |  |
| --- | --- | --- |
| Property | Description | Example |
| Trade Time | When was the suggestion | 2021-01-15 12:34:56.789 |
| Username | Alias of the original poster (OP) | ted\_smith |
| Security Identifier | Name of the stock or bond | AMZN (Amazon Inc.) |
| Strategy | Is the strategy long, short, or neutral | BUY 3260 AMZN AUG CALL SELL 3250 AMZN AUG CALL |

Next, a data collection process needs to find several properties that describe the strategy’s underlying instruments (see Table 2). For instance, Table 1 contains an example short call spread consisting of two option contracts. Information about both contracts is necessary to calculate the net position’s total performance.

Table 2: Security Properties

|  |  |  |
| --- | --- | --- |
| Property | Description | Range or Units |
| Trade Identifier | Unique value | Global Unique Identifier (GUID) |
| Underlying Price | Price of the stock tied to the option | Dollars |
| Implied Volatility | Standard deviation price movement | Annualized Percent |
| Delta | Value per $1 increase in underlying | 0 to 100 |
| Gamma | Position growth per $1 increase in underlying | 0 to 100 |
| Vega | Value change per 1% in implied volatility | 0 to 100 |
| Theta | Value change per 1 day passing | 0 to 100 |
| Initial PoP | Odds of profiting | 0 to 100 |
| Daily OHLCV price bars | An array of Open, High, Low, Close, and Volume amounts for each trading day | 5-tuples (Dollar, Dollar, Dollar, Dollar, Count) |

## Data Analysis Plan

The goal of quantitative analysis is to measure the strength of the phenomenon (Creswell, 2014). First, research needs to determine each Tasty Trade representative's trustworthiness by computing a ratio of accurate to inaccurate trade ideas. An accurate suggestion must touch 50% max profit, not require more than three times the initial margin, and expire at least one cent profitable.

Table 3: Transformed Properties

|  |  |  |
| --- | --- | --- |
| Property | Description | Units |
| Initial Margin Requirement | Capital requirement of the trade onset | Dollars |
| Max Margin Requirement | Capital requirements of the trade and most extreme point | Dollars |
| Hit 50% Max Profit | Touched 50% of the maximum profit | Boolean |
| Winner | The trade was profitable at the expiration | Boolean |

After assessing the accuracy of expert humans, a Monty Carlo Simulation will compete against these personalities. The Tasty Trade team follows a formal set of mechanics for trade placement, and automation can emulate these rules. This process will continue iterating thousands of times to uncover the probability of the PoP (Denis, 2015). Finally, this meta statistic will address the usefulness of (1) the individual personality, (2) generalizability of the strategies, and (3) the reported PoP score.

# References

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