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Day Trading

An Analysis of Public Day Trading at a Retail Day Trading Firm

The Purpose of The Analyses

Numerous market studies have concluded that accurate market timing is not possible, even for professional money managers. Day trading is the ultimate test of market timing in that the trade is opened and closed within the same day.

The emergence of the Internet and the availability of almost instantaneous real-time market data have increasing numbers of public investors interested in trading on a short-term or intraday basis. Retail brokerage firms concentrating on this speculative activity frequently claim that a high percentage of their retail public clients are profitable.

The purpose of this analysis was to analyze a statistically significant sample of public day trading experiences in order to determine whether public retail customers really have been successful day traders, and to identify and quantify the risks that public investors face as day or short-term traders.

How The Analysis Was Conducted

Step 1. The Project Group on Day Trading randomly chose thirty (30) short-term trading accounts for analysis from a retail day trading firm:

> Thirty accounts were analyzed in order to provide a representative sample of public short-term trading activity. The accounts were chosen without knowing either the distribution of short-term trades within the account or the profitability of the trading conducted.

Step 2. A matched trading analysis, commission-to-equity analysis, and turnover analysis was conducted for each account by STZ Analytical Services.

> A matched trading analysis matches opening trades with closing trades and was required to identify the profitability and duration of all trades in each account. A typical matched trading analysis conducted for this report is shown at Exhibit A-1.
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> Commission-to-equity and turnover analyses were conducted for each account to quantify the degree of activity and the costs associated with that activity in each account. Typical turnover and

commission-to-equity analyses conducted for this report are shown at Exhibit A-2.

Step 3. This analysis addresses all of the trading as well as the day trading conducted in each account. Trading statistics were calculated and evaluated based on the matched trading results of Step 2. The typical set-up analyses conducted for this report is shown at Exhibit A-3.

The analysis established important selected trading statistics for each account (shown at the top of Exhibit A-3). The individual account statistics were calculated on the basis of matched trading record shown below the heading "QTY, DAYS HELD, P/L". (Exhibit A-3 includes only the first 26 trades, sorted by Days Held for illustration).

Account A7, for example, had four day trades (0), three two day trades (2), two three (3) day trades, etc. The majority of the accounts traded 1,000 share lots.

Most of the selected statistics are well known to professional traders and trading system developers and are used to evaluate trading and trading systems. The individual account statistics were used to evaluate the performance of each account and pinpoint areas where other analysis was required.

Speculative Trading Analyses

There are two main issues in any speculative trading account:

- Will the account consistently make money?
- Will the account lose all of its capital?

These issues are interrelated and concern the probability that the trading will be successful, the effectiveness of the trading in controlling losses and letting profits run, and the percentage of capital risked on each trade. All are important.

Because an account has a net profit at any point in time does not necessarily mean it is a successful way to trade. For example, it is quite possible that an account is temporarily profitable yet is trading in a manner that yields a high probability the account will lose all of its funds in the near future. Selected statistics focus on the underlying causes of performance or non-performance.

Accounts traded in a manner that produces a high payoff ratio, high reward/risk ratio, and a high percentage of profitable trades (without overtrading) will consistently produce large profits and a low risk of ruin. The analyses concentrated on quantifying this underlying capability.

Important trading statistics:

1. **Average Trade**. The average trade is an important measure of any trader or trading system. It is generally the first figure considered in evaluating trading effectiveness. ***It is an estimate of the expected return for each trade.*** In general, the larger the value of the average trade, the better.

While the average trade statistic will be less in day trading than in longer term trading, most traders wouldn't consider a day trading system that makes less than an average trade of $200, or less than $400 on a longer term basis.

Stock day traders face both market and stock specific risk. The day trader doesn't know if a stock takeover is going to occur and cause an immediate large loss in his or her short position or if a major market decline will result in a large loss in the trader 's long position.

The largest day trading loss in this study was $12,800. It takes 64 trades at an average trade of $200 per trade to recover from such a loss. The largest 1,000 share loss was $81,522.

2) Payoff Ratio. The ratio of the average winning trade to the average losing trade. The larger this ratio is, the better. It is difficult to be a successful trader with a payoff ratio under 1. The sign of an effective trader is the ability to let his or her profits run and cut his or her losses short.

3) Probability of Success. Probability is calculated by determining the percentage of profitable trades. It is an estimate of whether the next trade will be successful. If the probability of success is low, the payoff ratio must be high. In other words, if you have more losing trades than winning trades, the average winning trades must be large enough to more than offset the average losing trades or you'll eventually lose all capital.

4) Reward/Risk Ratio. (Also known as the Profit Factor) The ratio is calculated by dividing the gross profits by the gross losses. Most traders want at least $2 of reward for every $1 risked.

5) Percentage of Capital Risked. Overtrading or risking too much per trade is a certain way of losing all your capital. Any trader, no matter how good, increases his or her risk of ruin by increasing the capital placed at risk on each trade.

6) Risk of Ruin. The probability that a trader will lose all of his or her trading capital. Risk of Ruin is the probability that a trader will realize a series of losing trades that consumes all of his or her remaining trading capital.[1]

If a trader has a 50 percent chance of winning/losing on a trade, his or her average winning trades must equal his or her average losing trades (Payoff Ratio of 1) or he or she will eventually lose all his or her capital. As the probability of success decreases the Payoff Ratio must increase to avoid ruin.

Risk of Ruin tables utilized to determine the Risk of Ruin calculations in this report are included in Exhibit B. The probability of Ruin (losing all capital) is displayed within the table as a number between 0.000 (0% chance of ruin) and 1.000 (100% chance of ruin). The four tables shown illustrate the effect of four money management strategies on a given trading capability.

This study will employ only Figure 4 of Exhibit B (10% of available capital at risk) since the accounts continuously risked more than 10% of their capital. In addition, if an account has a 100% Risk of Ruin at the 10% exposure level, it has at least that at all greater levels of exposure. Accordingly, all Risk of Ruin calculations will be taken or extrapolated from Figure 4 of Exhibit B.

Account Performance (All Trading)

This initial analysis covered all trading conducted in the thirty accounts (4,339 trades), over trading periods of between 1-10 months. As expected, all of the accounts had extremely large turnovers and cost-to-equity ratios as outlined at Exhibit C. The average account was open 4 months, had an average turnover of 278, and a cost/equity ratio of 56%.

The annualized cost/equity ratio measures the amount of profit required on average equity just to pay transaction costs and break even. Few traders can absorb transaction costs of 56% per annum and be profitable on a consistent basis.

The quantitative analyses results of account performance are reported at Exhibit D for all trading.

Two individuals traded six of the trading accounts reported in Exhibit D. One individual traded A11 and A22. The

other individual traded accounts A1, A5, A20 and A26. The accounts with the most trades (A22 and A20) were retained and the other accounts removed to avoid skewing the analysis. The 26-account analysis, representing 4,093 trades, is at Exhibit E reporting the Account Performance of all individual trades.

> A comparison of the cumulative statistics between Exhibit D and Exhibit E shows that all the findings remain the same. In sum, removing the multiple account trading was statistically insignificant.

Losing Accounts

Eighteen (18) of the twenty-six accounts (70% of the accounts), lost money. More importantly, all 18 accounts were traded in a manner that realized a Risk of Ruin of 100%. That is, 70% of the accounts would almost certainly lose any and all funds put at risk in them.

Winning Accounts

Eight (8) of the twenty-six accounts, or 30% of the accounts, were profitable.

Despite being profitable, three of the accounts A2, A24, and A29, were traded in a manner that realized a high potential Risk of Ruin (A2 –74%, A24-24%, and A29-84%) and low average trades. More importantly, however, the performance of each of these accounts is highly dependent on just one trade.

> The largest winning trade is a significant number as it relates to the net and gross profit. Trading (or a trading system) has a serious problem if a major portion of the profits comes from just one trade. The rule of thumb is that no more than 25% of the net profits should come from the largest trade.

For example, account A2's largest winning trade was $7,649.58. The account made only $609.10 on 99 trades without that one trade. One trade out of 100 made 93% of the profit. The largest winning trade in account A24 was $39,003.48, representing 39% of the profit on one trade in 597. Removing the largest winning trade from account A29 ($662) leaves the account with a loss. In like manner, the largest winning trade from Account A28 ($5,635.95) represents 31% of the profit on one trade in 285. In addition, 70% ($33,667.50) of account A13 profits of $48,645.40 came from just one trade in 149 trades. ***The largest winning trade sensitivity analysis shows the underlying weakness in these accounts.***

Only three (3) accounts, (11.5%) of the 26 analyzed, (accounts A8, A10, and A30) evidenced the profitability, reward/risk ratios, and low probability of ruin required for successful speculative trading. Account A8 was the best trader analyzed in this study (Account A8 held its positions for an average of 47 days with no day trades).

Conclusions (Short-term Trading)

If this analysis is representative of short-term public trading, the individual and cumulative results show that most public traders will lose money attempting to short-term trade. ***In fact, this study shows that 70% of the public traders analyzed will not only lose, but almost certainly lose everything they invest.***

Only three accounts of the 26 analyzed (11.5% of the sample) illustrated trading results and techniques sufficient to profit from short-term speculation. ***In sum, based on these findings, the vast majority of retail public investors (88.5%) would be best advised to refrain from short-term speculative trading.***

Account Performance (Day Trading)

Twenty-five (25) of the initial 30 accounts analyzed made at least one-day trade. The initial day trading analysis covering all day trading conducted in the 25 accounts (2,839 trades) is at Exhibit F.

This initial day trading analysis identified two major problems:

1. First, eight of the accounts had less than the 30 trades required for statistical significance. Five of these nine accounts had less than 5 day trades.
2. Second it is impossible to tell whether a trader opens a position as a day trade, and **when it becomes a loss,** just holds it. That of course removes the loss from the day trade statistics and skews the results in favor of day trading. In the extreme, a trader could appear very profitable as a day trader while losing all the funds in the account.

For example, the original A26 account had 3-day trades with all of them successful. The A26 trades are included at Exhibit G and illustrate the problem. Two of the three winning day trades were conducted utilizing INFO SEEK CORP on 4/24/98 for a $648.74 gain. However, another INFO SEEK CORP trade opened on 4/24/98 was held 40 days for a $13,863.30 loss. In fact, it is clear that the A26 trader is not an effective day trader, but just a poor trader who cannot take a loss.

Exhibit G shows that all of the trades held 3 days or less were profitable, while all trades held over three days were losses. Please note that all 10 long-term trades in the A26 account are losses and that A26 had a 100% risk of ruin when all trading was considered.

> An effective day trading analysis must therefore consider both the day trading and non-day trading conducted in each account.

Accordingly, a second day trading analysis was conducted utilizing only those accounts with more than a statistically significant 30 day trades, and the evaluation considered day trading in conjunction with the overall account performance. This analysis is included as Exhibit H and includes 17 accounts and 2,754 trades.

> A comparison of the cumulative statistics between Exhibit E (all day trades) and Exhibit G (all statistically significant day trades) shows that all the findings remain the same. In sum, removing the statistically insignificant trades loses nothing.

Losing Accounts

Eleven (11) of the seventeen (17) day trading accounts lost money. More importantly, *all 11 accounts were traded in a manner that realized a Risk of Ruin of 100%.* That is, 65% of these accounts would almost certainly lose any and all funds put at risk in them.

Winning Accounts

Only six (6) of the seventeen (17) day trading accounts made a profit. Four of these six accounts realized a significant risk of ruin. Account A10- 27.6%, A18- 57.5%, A24-45.2%, and A28-45.2%. Clearly, accounts that have over a 25% chance of ruin are not successfully traded accounts.

In addition, five of the six accounts were highly dependent on just one trade. Forty-three percent (43%) of account A10 profits come from 1 trade in 118, 47% of account A18 profits come from 1 trade in 47, 70% of account A24 profits come from 1 trade in 282, 52% of account A28 profits come from 1 trade in 203, and 31% of account A30 profits come from 1 trade in 275.

Account A20, with the highest average return of $242.05 per trade in the day trading analysis, realized a 100% Risk of Ruin when all trades in the account were considered. In short, account A20 day- traded for small profits but let large losing trades run.

The largest day trading loss in the study was $12,800. Clearly A10, A18, A24 & A28 could be one trade away from major losses

> **Indeed, an analysis of all the trading conducted in all the accounts shows that the average losing trade was held twice as long (9.53 days), as the average winning trade (4.52 days). The average intraday trade was also a losing trade. In short, these public short-term traders were cutting their profits short and letting their losses run.**

Clearly, no day trading account met all the criteria any experienced system trader would require before either buying a system or risking his or her capital. However, Account A30, with profitable performance in short-term and day trading, along with a good risk/reward and payoff ratio, was a consistent performer.

Conclusions (Day Trading)

There was only one successful day trading account in the 17 accounts analyzed.

Fifteen of the 17 accounts analyzed had a significant risk (probability of ruin over 27.6%) of losing all funds. Eleven of these 17 accounts had a 100% chance of ruin. That is, 65% of these accounts would almost certainly lose any and all funds put at risk in them.

Five of the six accounts, which realized net profits, were no more than marginally profitable and realized a large percentage of their profits from a single trade.

Speculative trading is volatile. Clearly, if a trader can make most of his or her profit on a single trade, he or she can lose it on one or two trades. Moreover, it should also be noted that any profitability evaluation must be conducted on a risk/reward basis. If you have 5 times the risk, you should require at least 5 times the reward.

The Sharpe Ratio compares the return from an investment with the risk incurred to earn the return. A risk/return analysis was conducted for account A30, the only account considered successful in both day and short-term trading. The Sharpe Ratio analysis (Exhibit I) clearly shows that although Account A30 was profitable, it did not produce a return commensurate with the risk to which it was exposed.

The Bottom Line

If this analysis is representative of public trading, it is abundantly clear that the average public investor should refrain from short-term trading. Only three (3) of twenty-six (26) accounts (11.5% of the sample) evidenced the ability to conduct profitable short-term trading

This study shows that 70% of the public traders will not only lose, but will almost certainly lose everything they invest.

Day trading is particularly risky. While the study found that three (3) accounts in twenty-six (26) could successfully conduct short-term trading, there was only one successful day trading account.

A Sharpe Ratio analysis of the only account considered successful in both short-term and day trading showed the trading returns were not commensurate with the risks to which the account was exposed.

The most successful account in the study, A8, had limited short-term trades and no day trading.

[1] This study will utilize Risk of Ruin tables developed by Nauzer J. Balsara author of " Money Management Strategies for Futures Traders." Mr. Balsara was featured in a December 1992 article for *Technical Analysis of Stocks & Commodities*, from which the Tables were taken.

Exhibits

A-1 Holding Period of Opening Transactions- Detail (Account A6)

A-2 Activity Ratios (Account A6)

A-3 Typical Account Worksheet

B Risk of Ruin Tables

C Account Facts/Summaries

D Account Performance (All Trades)

E Account Performance (All Individual Trades)

F Account Performance (All Day Trades)

G Holding Period of Opening Transactions- Detail (Account A26)

H Account Performance (Day Trades > 30)

I Returns versus Risk