The One Percent a Week Stock Trading Program - Part IV

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The One Percent a Week Stock Trading Program - Part IV will look closer at the strategy's stop-loss and profit target settings. We will analyze these preset constraints and their impact on a portfolio's outcome. For short-term traders, we will show that "*Cutting your losses and letting your profits run*" might not work as they thought it should.

Part I, **II**, and **III** unraveled a simple trading strategy anybody could use; it is free and available from **Wealth-Lab**. With a few minor modifications to the program, I changed the strategy's trading outlook and behavior in what should be considered a continuously turbulent stock market.

It responded with an impressive 56.66% compounded annual growth rate (CAGR), and this, over the last 14 years.

The original trading script was slightly altered by a few characters. I went from requesting a 1% discount before taking positions on Mondays to none at all, even went as far as requesting only a fraction of a cent rise.

The rationale behind this was simple: we are playing in a generally rising market, so at least we should also have a favorable long-term expectation that the market we are trading in will maintain its long history of slowly rising as its market average proxy, the S&P 500, can attest (See Figure #1 in **The Long-Term Stock Trading Problem**).

Wouldn't that be a novel approach: you play long in a rising market.

The trading procedures also had a weekly deadline. If the position had not reached its 1% profit target by Friday's close, it would be liquidated with either a smaller profit than 1% or at a loss. It was not given a choice. Requesting a 1% move in stocks is not a big deal. You can have that, and even more, in hundreds of stocks every day of the week. The problem is: will it materialize while you are holding it, and will you keep that profit?

But here, we were trading TQQQ under the same trading rules. An ETF three times more volatile than its non-leverage counterpart, QQQ. Volatility goes both ways (up and down $\pm\sigma$).

Therefore, it became reasonable to raise the profit target 3-fold. Otherwise, we were voluntarily cutting our profit potential short.

To accommodate trading TQQQ, I raised the profit target to 7%. Technically, also saying that the original 1% profit target was not enough for QQQ. In **Part III**, I gave the result of reducing the 7% profit target by two-thirds, showing that QQQ would have had a better outcome at the 2.33% level (see Figure #5 in **Part III**).

The 7% profit target request was arbitrary, and since we were trading in a generally rising market, I also requested that prices nearing their profit target increase that target by another 1%. Going from 7% to 8.07% ($(1 + 0.07) \cdot (1 + 0.01) = 1.0807$). TQQQ rewarded the move with a $20 million increase in profit for that added 1% move in a rising market. How demanding can you get?

In **Part III**, I also showed that implementing a typical fixed-percentage stop-loss procedure would become more restrictive the lower the stop-loss. For instance, a stop-loss of -5% reduced overall profit by over 80%. It also increased the max drawdown to -63.13%.

When you look at the results in Figure #4, **Part III**, you see the number of winning trades decreasing while the number of losing trades increases. Only 11 trades out of 744 changed sides, taking some previously winning trades and transforming them into losing trades. Without the stop-loss in place, those 11 trades had the opportunity to recover some. The stop-loss was making sure that the paper-loss materialized.

The -5% stop-loss cost the strategy over $\$50$ million, and it did not offer an ounce of protection since the max drawdown was even lower at -63.13%. The initial capital remained the same at $100k in all these simulations.

We should view the stop-loss more as making sure you take the loss. The sole objective of a stop-loss is to protect your capital in a downturn, and here, it failed miserably to do that simple job.

Not using any fixed stop-loss procedure performed much better.

So, Why Did This Strategy Succeed?

Why can this strategy outperform a market proxy benchmark? In a world where the average portfolio manager, after years of study and years of practice, only achieves the long-term average market return of about 10%. How is it that such a simple trading strategy could reach a 56.66% CAGR over its 14 years of existence? See Figure #1 in **Part II**.

The main trading decision was based on the following: Is it Monday? If yes, you placed a limit order above the session's opening price. If you got it, you placed another limit order to sell at the 7% or 8% profit target, depending on whether the price was already on its way to its target price.

So, why should this work at all?

Figure #3 in **Part III** and equation (1), can help answer. To summarize, we have: $F(t) = F_0 \cdot (1 + f_w)^W \cdot (1 - f_l)^L$. This binomial equation using the numbers from the simulation gave: $F(t) = 100,000 \cdot (1 + 0.0454)^{380} \cdot (1 - 0.0268)^{362} = 113,896,055$. This equation is sensitive to minor variations in the average percent return of winning and losing trades. For instance, just rounding these averages would give: $F(t) = 100,000 \cdot (1 + 0.045)^{380} \cdot (1 - 0.027)^{362} = 91,419,437$. Even minor changes to the average return per winning and losing trade will impact overall results.

Furthermore, the average profit target per trade (7%) is on an exponential function $F_{(t-1)} \cdot 0.07$, which increases with time and where the latest trades will have more impact on the portfolio's outcome. The position taken is an all-in bet $b_i(t) = F_{(t-1)}$. The value of that 7% will rise in step with $F(t)$. It also means that the bet size is compounding.

Having the average percent return of winning trades larger than losing trades: $f_w > |f_l|$ could be sufficient to make a strategy a winning proposition. The difference should compensate for the long-term return degradation as presented in **Part I**, and **II**. It would mean for an equal number of winning and losing trades, that we should have: $\frac{f_w}{|f_l|} > 1.0$. This objective was easily satisfied, as shown in Figure #2 in **Part II** and in the above equation.

We Have To Deal With The Volatility

Volatility is why the TQQQ strategy wins and why it exists. It's as crazy and as basic as that. On the latest three-month averages, TQQQ had a volatility of 14.59%, while QQQ's volatility was lower at 4.84%. Those numbers change all the time. It is a lot of price volatility for an ETF; a two-sigma move would be ±29.18%.

To make a profit, you need $(\pm q) \cdot (\pm \Delta p) > 0$, whether long or short. That is simple enough. The more volatility there is, the larger Δp can get and the more opportunities for profits and losses.

Should the average price variations tend to zero ($\overline{\Delta p} \to 0$), as in a martingale, for instance, profit opportunities would diminish considerably. You would need many more trades to make something of all those smaller profits, considering there will still be winning and losing trades. The win rate, the number of trades, and the average percent return per trade will matter.

The problem is that we do not know today, with any certainty, if tomorrow is an up or down day. You have to deal with probabilities and, even worse, the probability of an unknown probability. That is contorted.

We have a long statistical history of the behavior of price movements, including up

and down frequencies. But it does not give us any certainty measures for tomorrow's price. Even with what we might consider a 52% probability of an up day, you can still easily lose your bet, as if the loss, in hindsight, turned out to be a certainty it would happen.

To reiterate, there is no certainty that tomorrow is an up or down day. But, it will be in your face tomorrow at the close.

Because we want to trade short-term, our game needs to consider volatility and randomness. It was easy to demonstrate the volatility exploitation using the **One Percent Per Week** program (see Figure #1 in **Part II**).

The total profit was not a random occurrence, even though there was a high degree of random-like price movements. The program exploited the volatility of the TQQQ price moves, and again, volatility went both ways.

We must concentrate on TQQQ's volatility and position sizing to increase performance.

What The Program Does And Does Not Do

The **One Percent Per Week** program does not use technical or fundamental data to make its trading decisions. It asks for a Monday to take a trade.

Nonetheless, the strategy is still based on common market notions, such as the market over the long term tends to rise. It has done so for over 200 years. Even if we do not know the future, it is an easy bet to make that this phenomenon should continue.

It restates Mr. Buffett's bet on America. There are still better things to come, as simple as that. And this bet on America should also become yours, especially if you intend to invest in your future.

The program is time-constrained and has found its reason to participate in the game.

Any Monday, it is ready to make its bet: b_i. The first question should be: why is Monday a good reason to take a trade? The answer should be: it is not. It is just another day of the week. But, without doing anything, any research, you know that you will have one of those every week for quite some time.

Since you want to play for the long term, it is not a bad idea to have a one-week decision happen once a week, allowing you to take on a one-week long position in a generally rising market.

You have one recurrent decision point with no other reason than it happens with or

without you. And at those points in time, you have to decide, with no obligation on your part whatsoever: do you get in the trade or not?

The trade decision is not based on any other data of whatever kind. You only need to be convinced that, on average, you will have more up than down weeks over the long term. As mentioned, if history is any guide, it has been the case for over 200 years. Should that trend continue? By now, you should have an easy answer to that.

You know the stochastic equation to describe price movements: $dS = \mu dt + \sigma dW$, where μdt is the upward market drift and σdW is a random-like Wiener process. But, μ, like σ, and dW are evolving, erratic, and random-like functions. They can provide insight after the fact but are almost useless in determining what is coming next over the short term.

Nonetheless, μdt provides helpful information over a long-term horizon since it tends to the market's average growth rate $\mu dt \rightarrow \bar{r}_m$. And that becomes something we can play with, the long-term market average $\bar{r}_m$.

By doing nothing other than buy SPY and holding it for the long term (say 30+ years), you are almost assured of reaching this average market return. It is what index funds do. They mimic market indexes, and therefore should approach the average long-term market return. But that average is approximately 10%. You should want more than that. At least, I hope you do. It becomes your responsibility to make sure your trading strategy will outperform holding SPY.

Should you not be able to demonstrate to yourself that you can outperform SPY over the long term, you should seek someone else who could do it for you. However, you already have free tools you can control to do that job. And I must say with ease (a few minutes a week). It is up to you to determine how far you want to go, how fast, and how much risk you are willing to take to get there. Your quest, in essence, is $\bar{g}$ as in $F(t) = F_0 \cdot (1 + \bar{g})^t$.

It is how you will structure your trading methods that will make a difference.

You still have almost random-like price movements to deal with. You still do not know who is playing, why, or how hard. But you do know historical averages and some basic stochastic equations to explain what you see every day. It does not give you predictive powers since, even with all the information you have, you still cannot predict with any worthwhile accuracy what the price will be tomorrow or the day after.

You already know that whatever the stock, you would not be all-in unless you had the conviction it would be going up or you were a major company owner. If all you can buy are small chunks, you should always be on your guard for the unexpected. Black swans do appear here and there. You do not want to be trapped in one.

However, you are ready to accept any black swan that positively impacts your portfolio (like mergers and acquisition announcements). Nonetheless, you would also be willing to take a position if you knew the stock would not go bankrupt while you were holding it. TQQQ might just fall into this category since it would require quite a lot; some really dire times for it to drop to zero.

We often express the random part of price movements as σdW to represent the volatility of a Geometric Brownian Motion (GBM). We know that sigma is not a constant, yet we still use it to define an average volatility level; see its use in the Sharpe ratio. And from statistics, even if it is a generalization on something that is not a Gaussian process, we still insist on declaring sigma a volatility measure.

Volatility goes both ways, so we often use the plus-minus sign: whatever the average $\pm\sigma$. Also, the average of σdW tends to zero over the long term ($\sigma dW \to 0.0$), since it is the residual error to the regression line μdt.

The **One Percent Per Week** program harvests part of the positive sigma. We have a fixed profit target on the upside and no stop-loss on the downside.

We have yet to address the negative sigma meaningfully to reduce the impact of drawdowns. But still, I used the word harvest as if cultivating returns that, once having reached maturity (profit target), are harvested.

For example, putting the profit target out of reach, something like at 25% would have for consequence that none of the profit targets could be reached within a week's time. Even if the profit target is a stop-profit directive, removing the profit target would reduce the overall portfolio value to about $12 million from its $60 million in the simulation.

Not executing the profit target reduced the number of positive trades from 381 to 358 while increasing the number of losing trades from 363 to 386. Showing that 23 trades that could have finished positive failed to do so and finished in the red.

What Can This Strategy Teach Us?

That is also an excellent question. The best point would be that it is a participation game. You can win or lose only if you participate by taking positions over the trading interval. Not taking a position has no monetary value, except when we would have lost on our bet. In that case, not taking a position is a money saver.

All trades matter in an all-in trading scenario. From equation (#2) in **Part II**, we have: $F(t) = F_0 \cdot \prod^N (1 + r_i)$. And if any one trade resulted in $r_i \leq -1.0$, you would have lost it all. This equation says that we should apply extra caution in an all-in trading scenario. Therefore, we need to analyze the possibility and impact of such events.

Let's change the game. We buy SPY on Mondays at the open and exit on Fridays at the close. It would be the same as being all-in, as if we would buy and hold for the duration. As such, all we could do would be to get close to the average market return $\bar{r}_m \rightarrow \bar{r}_{SPY}$. Using QQQ, we could have $\bar{g} \rightarrow \bar{r}_{NDX}$ where $\bar{g} = \bar{r}_m + \alpha$. By trading the 100 stocks in QQQ, at full exposure, we would get that $\bar{g}_{QQQ}$, as if buying that alpha with no skill or expertise requirement.

The added alpha in certain scenarios is easy to get and free for the taking simply by the stock selection process. See my previous articles on building a retirement fund trading the 100 stocks in QQQ (as well as the following chart: **SPY vs DIA vs QQQ** which should answer which ETF to choose).

We can force the program to take a position every Monday, no matter what the open is, and sell it on Friday's close. Put the stop-loss and profit target out of reach of weekly fluctuations; set them at something like $\pm$25%.

It is simple and easy to demonstrate using the program (change two numbers). You would be in the market from Monday's open to Friday's close and be in cash during weekends. It would miss the Mondays' opening gaps up or down and lower the long-term return.

You would only have daily price gyrations and their impact on paper profits and losses. This would only be realized at Friday's closing price, and each position would be limited to the week's opening and closing prices.

As stated earlier, raising the profit target to out of reach, decreased the number of positive positions by 23 trades and made them recorded losses.

Figure #2 in **Part II** gave a max drawdown of -54.47% (it happened on trade #12, May 6, 2010) which could be called a real "Black Swan".

Google describes this date as:

> "*The May 6, 2010, flash crash, also known as the crash of 2:45 or simply the flash crash, was a United States trillion-dollar flash crash (a type of stock market crash) which started at 2:32 p.m. EDT and lasted for approximately 36 minutes*."

The average weekly maximum adverse excursion was more like -6.50%. But, the adverse maximum excursion only says how low the price got on a trade, not at what price the exit was executed. For trade #12, it was with a loss of -22.85%, and still kept the status of an outlier, one trade in 744 over a 14-year period.

Also, for some trades, the exit on Friday's close could be at the lowest price of the

week, but only a few would qualify for this. Nonetheless, no matter the price at the Friday close, that is where the trade was executed, which, in all probability, would be higher than the week's lowest price.

We cannot ignore that the flash crash happened, but a program without a fixed stop-loss procedure would not have reacted to the sudden drop in price. The close of the trade was still the next day on Friday's close.

We could classify the flash crash as a monumental scare. The best course of action would have been to wait it out (36 minutes). Nonetheless, anyone with a stop-loss in place, even up to the -50% level, would have seen their positions closed and at a substantial loss. At the time, it was a significant blow to many traders. We even saw shares changing hands at $0.01 on some stocks during the period. Do not worry; trades below a -50% drop were later canceled.

In Figure #2, **Part II**, we have the average weekly loss percent at -2.68% for the 362 trades having losses, showing that the losses were not executed at the average lowest price of the week, which was near -6.50%. Within 200 trades, the average maximum adverse excursion would have settled near its long-term average and remained near that level for the rest of the simulation.

What was disturbing about the -5% stop-loss setting was that on a big gap down, the stop-loss would be hit, but the loss would not be limited to -5%. The -5% stop-loss would be triggered; however, the execution would be at whatever opening price was available.

This could mean that a -15% drop in price at the open would trigger the stop-loss and be executed at the -15% price, making the scenario worse than it could have been.

In trying to protect yourself, you managed to make matters worse. It is ironic how our actions in the market could harm our portfolios and objectives, even though they initially sounded reasonable. To limit losses, it sounds sensible at first to set stop losses. But it appears not that reasonable to make them hold whatever happens. Nonetheless, there is little you can do to get out of the way of a black swan event. Usually, we do not even see them coming.

Regardless, you need some protection, or you accept the drawdowns as part of the game.

You change the question to: How much harm can those drawdowns do to my long-term portfolio? Will I go bankrupt by accepting those drawdowns? The answer is yes and no; it all depends on what you trade and how you trade.

The **One Percent Per Week** strategy is only one of many. Determining what to trade

and how to trade is a matter of choice.

What Is A Possible Takeaway Here?

We have often heard as part of Wall Street folklore: ”Cut your losses and let your profits run.” It sounds so obvious that we generally don’t even give it a second thought and accept the mantra.

Here, we have a simple trading strategy that respects neither of those two precepts. We have a strategy where if we set a -5% stop-loss, we lower our portfolio profits by over 80%. And if we remove the profit target to let profits run, we also lose about 80% of our potential profits.

In a way, saying: ”Cut your profits short and let your losses run.” Contradicting all those same notions from so many market gurus. And if you dared only to keep the ”cut your losses” in place while letting your profits run, from the $60 million in expected profits, your portfolio would only be able to reach $2 million (a 96.6% drop) simply due to some Wall Street adage.

From the $2 million outcome, it would require a 3,000% increase to reach that $60 million in profits, which were there for the taking starting with a $100k initial stake. If you had started with $1 million, add a zero to the outcomes.

Figure 1: Trade Distribution

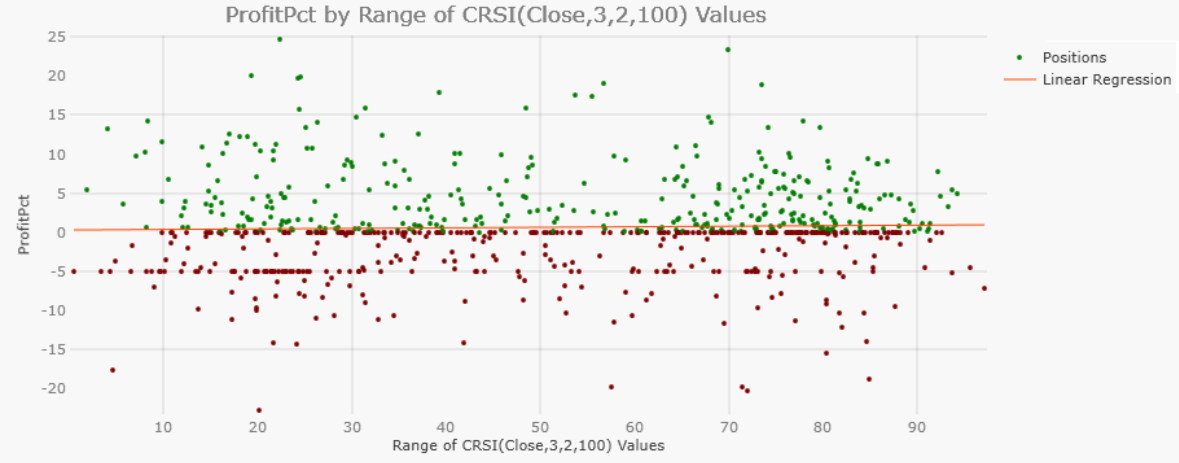


Figure 1: One Percent Per Week - Trade Distribution with -5 percent stop-loss

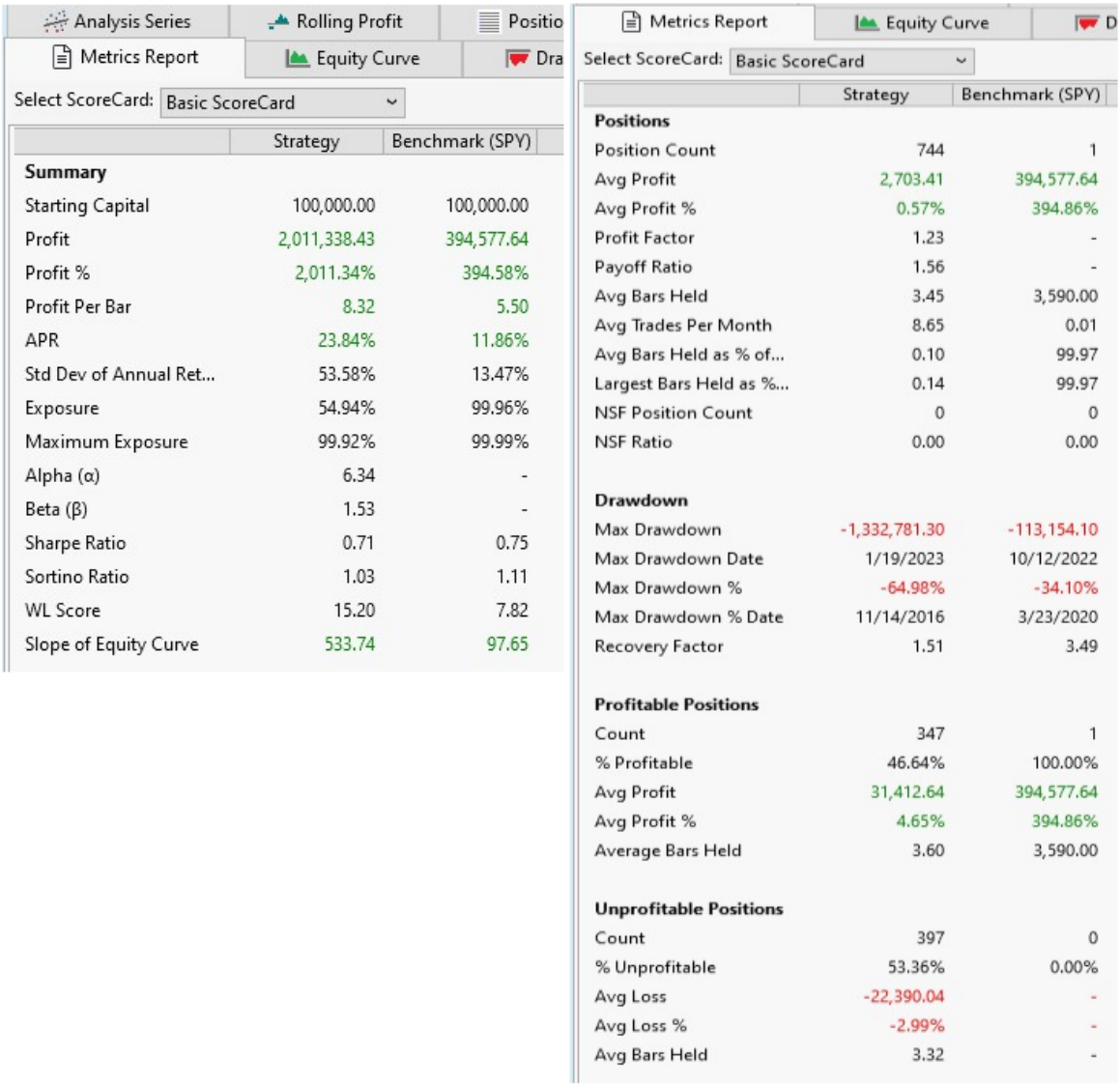
(**Click here to enlarge**)

The easiest demonstration of that outcome is to show simulation results. The trade distribution and the portfolio metrics charts similar to the ones in previous articles illustrate the point: ”Cut your losses and let your profits run.” It required changing two

numbers in the program's code. The stop-loss was set at -5%, while the profit target was raised to 25% so that none of the trades could reach it.

In Figure #1 above, we have the trade distribution with a line of red dots at the -5% level, and in Figure #2 below, the portfolio metrics. You would still have made some profits (a 23.84% CAGR), but nothing compared to the $60 million you could have had not following some Wall Street folklore.

Figure 2: Portfolio Metrics



Analysis Series | Rolling Profit | Positio

Metrics Report | Equity Curve | Dra

Select ScoreCard: Basic ScoreCard

	Strategy	Benchmark (SPY)
Summary		
Starting Capital	100,000.00	100,000.00
Profit	2,011,338.43	394,577.64
Profit %	2,011.34%	394.58%
Profit Per Bar	8.32	5.50
APR	23.84%	11.86%
Std Dev of Annual Ret...	53.58%	13.47%
Exposure	54.94%	99.96%
Maximum Exposure	99.92%	99.99%
Alpha (α)	6.34	-
Beta (β)	1.53	-
Sharpe Ratio	0.71	0.75
Sortino Ratio	1.03	1.11
WL Score	15.20	7.82
Slope of Equity Curve	533.74	97.65

Metrics Report | Equity Curve | D

Select ScoreCard: Basic ScoreCard

	Strategy	Benchmark (SPY)
Positions		
Position Count	744	1
Avg Profit	2,703.41	394,577.64
Avg Profit %	0.57%	394.86%
Profit Factor	1.23	-
Payoff Ratio	1.56	-
Avg Bars Held	3.45	3,590.00
Avg Trades Per Month	8.65	0.01
Avg Bars Held as % of...	0.10	99.97
Largest Bars Held as %...	0.14	99.97
NSF Position Count	0	0
NSF Ratio	0.00	0.00
Drawdown		
Max Drawdown	-1,332,781.30	-113,154.10
Max Drawdown Date	1/19/2023	10/12/2022
Max Drawdown %	-64.98%	-34.10%
Max Drawdown % Date	11/14/2016	3/23/2020
Recovery Factor	1.51	3.49
Profitable Positions		
Count	347	1
% Profitable	46.64%	100.00%
Avg Profit	31,412.64	394,577.64
Avg Profit %	4.65%	394.86%
Average Bars Held	3.60	3,590.00
Unprofitable Positions		
Count	397	0
% Unprofitable	53.36%	0.00%
Avg Loss	-22,390.04	-
Avg Loss %	-2.99%	-
Avg Bars Held	3.32	-

Figure 2: One Percent Per Week - Portfolio Metrics with -5 percent stop-loss

(**Click here to enlarge**)

Without performing your own strategy simulations, how would you uncover the

truthfulness in such assertions? These ”assumptions” were given at a time when they did not even have access to computers to study the impact of what they were advancing. But nowadays, we do have the tools to make those required simulations and demonstrate their validity.

You can redo all the presented simulations in this series of articles. Note that we did not talk about market fundamentals or make outlandish predictions.

Simple common sense and ordinary notions anybody can understand and apply to their own scenarios. It is always your choice, and it will continue to be so.

Related Papers and Articles:

The One Percent a Week Stock Trading Program - Part III

The One Percent a Week Stock Trading Program - Part II

The One Percent a Week Stock Trading Program - Part I

The Long-Term Stock Trading Problem - Part II

The Long-Term Stock Trading Problem - Part I

The MoonPhaser Stock Trading Program

Anticipating A Stock Portfolio's Long-Term Outcome

The Big Open Project

Sitting On Your Bunnies Might Be Your Best Investment Yet

Self-Managed Retirement Funds

Make Yourself A Glorious Retirement Fund

The Age Of The Individual Investor

Use QQQ - Make the Money and Keep IT

Take the Money and Keep it – II