

Performance based off of required account size- Dean Hoffman ©

Often times when comparing trading system performance the natural inclination is to simply compare returns. If you have two systems that both traded a \$100,000 account and both made a 50% return and both had a 30% drawdown and both had the same length drawdown they would appear pretty much the same right? I would say the answer to that is “not necessarily”.

What if one system only used on average of \$30,000 in margin while the other used an average of \$70,000? Theoretically you could have funded the first account with less money and invested the remaining dollars elsewhere. Therefore, I am suggesting that you also consider viewing returns as being based off the account size required as opposed to an arbitrary number. This could allow you to determine an amount by which to notionally fund an account. In other words, you may trade the account as though it were a 100k account, but only actually put up \$30,000 in trading funds because that is all you think you need. Many money managers and CTA’s offer this type of notional funding approach. It can be a very efficient use of capital. (It should also be noted that this can lead to a much higher risk of margin calls too).

The commercial testing software package Trading Recipes has an interesting way of computing these numbers. It can run what is called a worse case analysis. What this does is looks at every possible starting day over a period of time (for example 10 years). If there were 1000 different trades you could have started trading from then it (Trading Recipes) tests the system from every single one of those 1000 trades. It then sums the amount of the worst drawdown and the required margin starting from each one of those 1000 trades. Furthermore, it goes on to show how the system performed over the next 12 months. This allows you to create a frequency distribution of yearly returns verses account size required.

For the sake of this example, I am going to test 4 different trading systems and compare the results. The portfolio is 15 diversified markets that are all reasonably high in liquidity. In addition, I have approximated margin based on 2 times the 5 day average true range multiplied by the point value, and then averaged that over a period of 5 years. The reason for doing it this way is that margins change rather dramatically over time. Changing margins are primarily caused by changes in a markets underlying volatility. Computing this way caused the margin to increase during increased volatility periods and decrease during decreased volatility, this risk adjusted concept is similar to the way it’s actually done. I think this is far more robust than to just use the current margin values because they may have been very different in the past and or will be in the future. Even though these may not be the exact margin amounts the above formula does seem to be close to the current margin levels in many commodities. You could always use a higher multiple if you wanted a greater “cushion”. This is just for illustration purposes; decide the best way for you to assume past and future margins in your testing (it would be nice if a data vendor like CSI sold data files with the exact exchange minimum margin requirements throughout history, I’ve not seen it.)

For all tests:

Period tested was: 1/1/90 through 12/31/2003

Data: CSI backadjusted contracts

Slippage and commissions: \$75

Starting Capital: \$100,000

Money Management: Risking 2% of equity per trade* or a single contract if risk was less than \$3000. Whichever was greater.

15 market portfolio: Euro Currency, Corn, Kansas City Wheat, Cotton, Sugar, Coffee, Crude Oil, Natural Gas, Japanese Yen, Swiss Franc, Five Year Notes, Thirty Year Bonds, Nikkei Index, London Nickel and London Copper

*Due to liquidity and fill price considerations risk can not always be limited to a specific percentage.

In the first test we will use a Channel Breakout System similar to the “Turtle” style of trading. Specifically, this system buys at the highest price of the last 20 days and sells at the lowest price of the last 20 days. It then exits at the lowest price of the last 10 days for long positions and at the highest price of the last 10 days for short positions. Risk was computed as a multiple of average true range, and additional protective stops were placed at those same levels.

Channel Breakout (20/10)

Starting periods available to test since 1990: 2080

Average required account size: \$62,026.00**

Average first year profit: \$39,086

Ratio of average account size required to average first year profit: 0.63

In this next test we use the same exact rules as above except the input values change to 50 and 20 (From 20 and 10)

Channel Breakout (50/20)

Starting periods available to test since 1990: 1017

Average required account size: \$35,009.00**

Average first year profit: \$52,341.00

Ratio of average account size required to average first year profit: 1.49

Aberration Trading System:

Starting periods available to test since 1990: 472

Average required account size: \$12,502.00**

Average first year profit: \$23,148.00

Ratio of average account size required to average first year profit: 1.85

Checkmate Trading System

Starting periods available to test since 1990: 551

Average required account Size: \$15,922.00**

Average first year profit: \$39,659.00

Ratio of average account size required to average first year profit: 2.49

Synergy Trading System

Starting periods available to test since 1990: 536

Average required account size: \$17,358.00**

Average first year profit: \$52,196

Ratio of average account size required to average first year profit: 3.00

** (Margins were approximated, they could be significantly higher or lower)

Here you can see a very interesting phenomenon. The average first year profits for the Channel Breakout (20/10) were almost the same as Checkmate. Yet the average required account size for Checkmate was less than half. Similarly, the average first year profits for Channel Breakout (50/20) were almost the same as Synergy. Yet the average required account size for Synergy was again about half.

This can be interesting information for somebody who is looking to notionally fund an account. If nothing else, it's an eye opening perspective of how two systems can produce roughly the same profit in a year given the same account size and money management, yet one of those systems can have a much lower historically required account size. Generally speaking, a reversal system or a short term system like the (20/10) Channel Breakout will likely have higher requirements because of the likelihood of being in more markets at the same time.

We have done these tests on quite a few other systems. If you'd like to see those reports, or if you would like the complete spreadsheet reports used in generating these tables please email me direct at dean@traderstech.net

Dean Hoffman is a systems trader and developer of trading systems and has been involved with the futures industry for over 15 years. His extensive research on commodity trading led him to the creation of many proprietary indicators and methods. He currently trades and develops portfolio-based trading systems and system combinations.

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FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.

ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.