

SYSTEM PERFORMANCE EVALUATION

Extracted from Chapter 15 of “Cybernetic Analysis for Stocks and Futures”, John Wiley

Taking away all the details of the particular system, there are two statistics that enable you to assess what performance you can expect. These are the percentage of profitable trades and the Profit Factor. It is desirable to have as high a percentage of winners as possible, but this need not be greater than 50% to be profitable if you make more on winning trades than you lose on losing trades. Profit Factor is the ratio of Gross Winnings to Gross Losses. In terms of gaming, it is the payout probability. By determining whether a trade is a winner or a loser using the percentage wins and a random number generator, applying the payout probability to each trade, and summing the randomly selected trades you can provide realistic expectations for the equity growth produced by the system. Only in this sense can randomization be introduced to establish performance. Simply winning or losing is not a random occurrence.

We can make an equity growth simulator and plot the results in an Excel spreadsheet. We need to first insert the two important statistics. In cell A1 type “% Winners” and in cell A2 type 45. In cell B1 type “Profit Factor” and in cell B2 type 1.5. The values of 45 and 1.5 are only initial values. The entries into cells A2 and B2 are system statistics that you can change to visualize their impact on equity growth.

In cell A3 input =RAND(). This creates a random number having a uniform probability density in the range between 0 and 1. This random number is compared to the probability of a win by inserting =IF(A3<B\$1/100,B\$2,0) into cell B3. This conditional statement says that if the random number falls within the winning probability then assign the payout probability (the Profit Factor) to the trade, otherwise assign a value of -1 to the trade. This is the outcome of the trade. In cell C3 input =B3. Copy all of row 3 into row 4. Then change cell C4 to be =C3+B4. This sums the trades in column C. Next copy all of row 4 and paste into rows 5 through 500. Column C now becomes the equity growth for the randomized set of trades using only the percent winners and Profit Factor. This equity growth changes every time you press F9, causing the spreadsheet to recalculate.

You can plot the equity curve for ease of interpretation. To do this, highlight cells C3 through C500. Then click on the chart wizard and input the data as requested. First, select a line type chart and click on the type shown in the upper left-hand corner of the thumbnail examples. Click Next. Then click Finish. Your chart is done! Now you are free to experiment with the kind of equity growth you can expect from your trading system. Just press F9 to recompute the spreadsheet. You will create a new randomized equity growth curve because all the random numbers have changed. Repeat as often as you desire to get a feeling you know what to expect.

The message is to not blindly accept an equity curve (real or hypothetical) from a vendor without also finding the Profit Factor and Percent Profitable statistics. In addition, this method demonstrates that Profit Factor and Percent Profitable trades can displace traditional measures of goodness, such as the Sharpe Ratio, for evaluating system performance.