Math & Money,

Eliminate The Weak Link In Your Trading System

Free Position Sizing Calculator &
Capitalization Calculation Spreadsheet Included

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Money Management, Why Essential

I sometimes wonder if money management would be more accurately portrayed as the "missing link" rather than the "weak link" in trading. Because you seldom hear anyone talk about it. Everyone is always looking for the "holy grail" indicator that nobody else has that is going to make them their fortune, when in fact, if they just applied effective money management to their existing strategy, assuming it is a sound strategy, this could very well be their key to success.

Imagine for a moment, if you were on the Titanic after it struck the iceberg! As you were scurrying for a life boat, you passed a deckhand who was busy polishing the brass handles on the Captains' cabin. No doubt, you would not only think he was wasting his time, but crazy too. Well, this might be an over dramatization, but with regard to your trading account, even if you have a great strategy, if you don't manage your money properly, you're just polishing the brass handles of a sinking ship, because given enough time, both the ship and your money will be long gone. Why is this? Well, answering this next question will get us on the right track.

What Is A Zero Sum Game?

The general population usually refers to a zero sum game in the context of gambling. The term means that the winnings paid to one player come from another, like a poker game for example. If you have two players and combine each players net losses and wins, you get zero.

Due to it's nature, a zero sum game promotes an almost ruthless competition, because what you end up with is a double or nothing scenario. If you don't win, you simply are not short of your winnings, but you lose something you already had as well. Why do you need to know this? Because it helps you understand the mind set of the players involved. Walk down the street and try to take someone's wallet from them and see the reaction you get! Most are very committed to keeping what belongs to them, so don't expect any less when you trade.

Why bring this up? Because it shows the importance of taking your trading seriously by educating yourself properly and taking the necessary precautions to protect what you have through proper money management. To add to the seriousness of the game, is the fact that trading is a playground that leaves you with even more of a mathematical disadvantage because even if you sell a stock for the same price you paid for it, you come out with a loss because of commissions and slippage (the difference between the bid and asking price), which actually makes trading a “minus sum” game.

Consideration of the above doesn't make intelligent money management just a good practice, but a necessary one as well. Just to drive the point home a little further, lets see what happens if you don't take the necessary steps to protect your trading account.

Recovering From your Losses

What happens if you don't take precautions to protect your trading account? Well, lets see. Suppose you have a modest trading account of $10,000. If you were to risk only 15% of it , $1,500, and lost it. How much would you have to make back to break even? Only $1,500 you say. Well, that is true, but now you only have $8,500 to make it back with. So you will need to make 17.7% profit instead of only the 15% you lost! What if you risk another 15% and lose? Well that would be an additional loss of $1,275 ($8,500 x 15%). Now you have a total loss of $2,775 and need to make 38.5% profit just to be back where you started.

How about one more loss? Well now you need to make a 63% profit. And finally, what if you incurred only four losses in a row risking your modest 15%? You would need a whopping 92% profit just to get back to the starting gate! So without taking the proper precautions, in a very short time your trading carrier could be over.

So now we can see what is at risk, so let’s see what we can do about it in the next chapter.

Capitalization

You don't see stock market capitalization discussed very often, which surprises me because I am frequently asked, "how much do I need to start trading?" or "how much should I invest?"

Now we are NOT talking about position size, which refers to a percentage of you total capital. We are talking about the total amount of capital you have which will help determine your position size. Perhaps this isn't discussed often because of the harsh reality of the situation, that being that many would not like the answer they get.

So how much capital is required to trade? In the end this is a personal decision, but perhaps the examples below will help you determine for yourself how much is needed.

In the example below, we are using three scenarios. All of them assume you have made ten trades, with 70% winners & 30% losers, which makes for pretty good trading. The winners are 10, 10, 8, 6, 6, 1 & 1% while the losers are 2, 2 & 6% (negative of course). While all three scenarios make the same percentage wins and losses, note the total difference in overall percent profit.

Example A

Buy	Sell	Profit / Loss	Comm	Profit
1,000	940	-6.00%	40	-100
1,000	980	-2.00%	40	-60
1,000	980	-2.00%	40	-60
1,000	1,010	1.00%	40	-30
1,000	1,010	1.00%	40	-30
1,000	1,060	6.00%	40	20
1,000	1,060	6.00%	40	20
1,000	1,080	8.00%	40	40
1,000	1,100	10.00%	40	60
1,000	1,100	10.00%	40	60
10,000	10,320	32.00%	400	-80

Total Profit / Loss --> -8.00% *

Example B

Buy	Sell	Profit / Loss	Comm	Profit
5,000	4,700	-6.00%	40	-340
5,000	4,900	-2.00%	40	-140
5,000	4,900	-2.00%	40	-140
5,000	5,050	1.00%	40	10
5,000	5,050	1.00%	40	10
5,000	5,300	6.00%	40	260
5,000	5,300	6.00%	40	260
5,000	5,400	8.00%	40	360
5,000	5,500	10.00%	40	460
5,000	5,500	10.00%	40	460
50,000	**51,600**	**32.00%**	**400**	**1,200**

Total Profit / Loss --> 24.00% *

Example C

Buy	Sell	Profit / Loss	Comm	Profit
10,000	9,400	-6.00%	40	-640
10,000	9,800	-2.00%	40	-240
10,000	9,800	-2.00%	40	-240
10,000	10,100	1.00%	40	60
10,000	10,100	1.00%	40	60
10,000	10,600	6.00%	40	560
10,000	10,600	6.00%	40	560
10,000	10,800	8.00%	40	760
10,000	11,000	10.00%	40	960
10,000	11,000	10.00%	40	960
100,000	**103,200**	**32.00%**	**400**	**2,800**

Total Profit / Loss --> 28.00%

* This is the total profit / loss as a percent of the initial investment.

Example A shows a negative 8% return, while B shows a 24% positive return and C shows a whopping 28%! Why the drastic differences? The amount of capital invested! Example A uses $1,000 to trade with, B uses $5,000 and C, $10,000. Again, we are not talking about position size, these amounts are a position size, but it is controlled by the amount of capital you have to trade with. So if you want to place a trade for example, using $10,000, you must have more than that obviously or you would be using 100% of your capital.

Why does the amount of capital make a difference in the percent of your total profits? Because these examples take your commission fees into account and your commission fees are not based upon a percentage of the amount you trade with, they are a flat fee. In this case, $40 ($20 in & $20 out). In reality, slippage would come into play too and work the same way. So as you can see by these examples, no matter how good your trading ability is, there is a minimum amount of capital required to trade with and still make a profit. If you have a large amount of capital to start with, then this is not an issue. Many new traders however, start with very little capital, and as you can see here, there is a point where it is not profitable to trade, even if you have a good system.

If you would like to modify the figures above to better reflect your individual circumstances, you can download a free Excel version by clicking on the link below. It is a spreadsheet that will allow you to change the investment amount, amounts of wins, losses and commissions. Simply click on the link and select "save".

Capitalization spreadsheet

Position Sizing

Position sizing is a simple, effective method to maximize profits and minimize losses regardless of the trading strategy you are using. Even with proper capitalization, incorrect position sizing will run your financial ship of opportunity into the rocks.

Here is a recent example that most are familiar with that will demonstrate this point. Enron! There are not too many that are unaware of the financial disaster that occurred there. What amazes me though are the growing number of people I keep hearing about, and supposedly intelligent at that, who lost their whole life savings because of the Enron ordeal. There was a saying I learned as a child that is very easy to understand, "Don't put all of your eggs in one basket". It doesn't get any simpler than that. That's what position sizing is all about, it is more sophisticated than that.

For the sake of simplicity, lets' say you have an account of $100 and you invest $25 per trade. Obviously, if you incur only four losses in a row, your account would be wiped out! On the other hand, what if you invested only $2 per trade with the same account (the famous 2% rule)? It would take a string of fifty losses to clean you out. But, being unnecessarily “safe” can also result in a loss in profits.

For instance, with the above example, lets' say you profited on 60% of the trades and lost 40%, 100 trades total. Lets' further assume that the winning trades produced 10% profit each while the losing trades produced a 5% loss each. Applying the 2% rule above would have only earned you $8 total, while trading the larger position of 25% would have earned you $100! Over 12 times more! It would look like this:

Account equity =	**$100.00**			
2% equity =	**$ 2.00**			
(10% win = $2 x 0.10)	$ .20		x 60 trades (win 60% of trades) =	$12.00
(5% loss = $2 x 0.05)	$ .10		x 40 trades (lose 40% of trades) =	($4.00)
			Total Profit =	**$ 8.00**
25% equity =	**$ 25.00**			
(10% win = $25 x 0.10)	$ 2.50		x 60 trades (win 60% of trades) =	$150.00
(5% loss = $25 x 0.05)	$ 1.25		x 40 trades (lose 40% of trades) =	($ 50.00)
			Total Profit =	**$100.00**

Now I'm not saying to invest 25% of your equity per trade, but this demonstrates that you need a basis for determining your correct position size.

Unless you've got money to burn, you need a correct position size to balance the best AND safest return on your account. Otherwise, you risk losing too much, or profiting too little. The Laws of Mathematics can determine that amount for you.

To determine the most profitable position size, you need to take into account how much you expect to win / lose and how often you expect to win / lose, then you need to give the weight to each piece of data. The correct relationship in these numbers can and will make the difference between success & failure.

Obviously to employ this, you must have a specific trading plan to know what these numbers are, so the output will be consistent with the input. You can have more than one of course, but if you do you should keep your records for each strategy separate from the others, at least for this purpose. So, if you have already been trading with a strategy, this is where you want to obtain this information from. If you are embarking on a strategy for the first time, then you should at least back test the strategy on some trading software to get a rough idea of how you will do. If you do not have access to any back testing software, then it would be wise to use a record produced from paper trading.

Also, if you are using back tested data, it's best to use conservative figures. As time goes on and trades are closed, then you should start using "real" data for this purpose, as it will prove more reliable.

If you would like a calculator that will recommend the optimum amount of your capital to invest in each stock transaction, based upon the mathematical relationships of the percentage of wins / losses and there respective amounts, then click on the link below and select, "save" to download a free position size calculator.

Calculator

The calculator is easy to use. Simply enter the percentage of trades you expect to profit on and the expected percent each profit and loss will be. The calculator will then mathematically optimize your position size to get the most out of it no matter what your trading performance is.

Remember the saying though, "garbage in, garbage out". If the figures you enter are not an accurate representation of your trading history, then the investment amount recommended may not be the optimum amount. Additionally, keep in mind that the percentage it recommends is based upon the ever changing total size of your account and the performance of it. So if the performance changes, you should update the figures put into it, and while the recommended position size will remain the same if the performance does, the actual dollar amount will change as your account grows or shrinks in order to maintain the same percentage.

The next logical point to cover after position sizing would be the stop loss strategy one decides to use. We won’t discuss this here though as it really deserves more than just a chapter.

Emotions & Money

Some may be surprised to find the subject of emotions included in a money management discussion, but it is actually very appropriate, because if we don't control our emotions, it can send our money management program on an unscheduled detour. For this reason, it must be mentioned how important it is to control your emotions while trading. To demonstrate how import this can be consider the following example.

We have all seen how a sports figure will sometimes choke during an important point in his game due to pressure. He misses a shot that he normally would make any other time. What happened? He lost his focus! Simply put, he became more concerned about the outcome and what was happening around him than the task at hand. The same thing can happen with trading.

If you become overly concerned with how much you are going to make (*greed*) or how much you are going to lose (*fear*), these emotions are going to have an effect on how you trade. This fact is inescapable. You must stay focused on the task at hand, that is, information management. How do I do this you ask? "I would be nuts to not care if I win or lose!" This is true, but the time to be concerned is not during the trade, it is at the time you decide to deploy your strategy. You evaluate a strategy. You test it. And then…*you trust it!* If you don’t trust your plan, you should not be using it.

I climb cliffs for a hobby. In doing so I set up what is called a belay. This is a means of securing myself to the rock mass by using a harness, ropes, and other miscellaneous hardware. When I am in the middle of a climb, I don’t worry what will happen if I slip! I *know* my belay will hold me. That is not to say that I haphazardly set up my belay. Far from it. I set it up very carefully. I check it and then I recheck it. The same should occur with your trading.

The point here is simple, but it is so simple that if we are not careful, we may be inclined to not give it the credit it deserves. All forms of short term trading, except for day trading, can and should be implemented using end of day data. "You evaluate a strategy. You test it. And then…*you trust it!* If you don't trust your plan, you should not be using it." Your best strategy is to make your plans before battle, not on the battlefield. MAKE YOUR BUYING AND SELLING DECISIONS WHEN THE MARKET IS CLOSED! This is one of the easiest ways to ensure you emotions don't start to rule your trading decisions, to that end, don't sucumb to the temptation of viewing intraday price charts for open positions you have. This is an easy way to implement, "exceptions to the rule" that are rooted in emotion.

I'm sure you have heard it said thousands of times, "People don't plan to fail, they fail to plan". Well, if you have a plan, but don't follow it, it's the same thing. If you insist on evaluating possible buy or sell signals while the market is open, it will only be a question of time before you start to veer from you strategy, and at that point you will have no plan at all.

If after a self evaluation you feel your emotions are controlling your trading, it would probably be a good idea to seek out a course specifically on this subject.

Margin Accounts

This is where you can turbo charge your trading. If you weren't interested in making an efficient return with your money, I'm sure you would just put your money in a savings account. So a margin account is just another resource with which you can increase your profits. Now I say "can" because it can also increase your losses.

This is where many get confused about whether or not a margin account is good to have. You see, it really depends upon the trading strategy you have, which includes your money management as we have seen. Some say that it is too risky to use a margin account. Really though, it is no more risky than investing your hard earned cash! Using a margin account simply accelerates your trading capabilities. You can lose faster or profit faster. The percentage of trades that you win is a different subject than how fast you do it. If you are concerned about winning and losing, then you need to first be concerned with your strategy. Once you have tested it and have built trust in it, why would you not want it running at full speed.

So to make the most of our resources, you want to be using a margin account. This being the case, you will only buy securities priced over $5.00, as those below the $5.00 mark do not allow the use of margined funds, at least in US markets. Using a margin account allows you to leverage your money to a the greatest extent possible. You can buy at least double, therefore profit at least double of what we could without it. Some may balk at the fact that you have to pay interest on the money borrowed. If you compare the interest being paid out to the rate of return you are making with your account, you are saving pennies and throwing away dollars. Now this of course is made with reference to short term trading. If you are a buy and hold person, then perhaps when all is said and done, you interest might be more than your profits and dividends from the stock. Back to short term trading. All businesses have overhead. Just think of this is part of your overhead for trading, just like commission fees.

The Magic of Compounding

Everyone of course has different financial goals, and if you have got big plans or dreams, sometimes when you start out, they can seem to be unreachable. Well, I'm here to tell you that if you have a good trading and money management plan, compounding your profits can help you meet your goal faster than you ever imagined!

To illustrate how powerful compounding can be even with a modest initial investment, note the table on the next page.

For illustrative purposes only, assume you have only $5,000 to invest. If you put that in a margin account, you can easily invest $10,000 (not all in one trade of course) and still have some left over as a cushion for losses, and draw downs in your open positions.

This illustration provides for swing trading. The average swing that we will ride is about three days. There are 4.3 weeks in a month. To error on the safe side though, lets say that the average swing last five days and that there are only 4 weeks in a month. Since we have a margin account, we are doubling all that we are doing. So instead of investing $5,000 once per week, four times per month, we are investing 5,000 twice per week, four times per month, or $40,000 per month. If we generate an average net return (after commissions assumed $20 in and $20 out) of only 3% on each of those eight trades, that would be 3% X 8, or 24% return on our $5,000 for one month. WOW!

Our net profit would be, $1,200! If that amount is left in our account, the following month we will have $6,200 cash, $6,200 margin, for a total trading power of $12,400 to start. As the account compounds, the balance skyrockets to almost one hundred seventy thousand within twenty-four months! Now that’s POWER!

Compounding Investment Example

	Accumulated Captial		No. Times Invested		Avg Return		Profit to Reinvest
Month 1	$5,000	X	8	X	24%	=	$1,200
Month 2	$6,200	X	8	X	24%	=	$1,488
Month 3	$7,688	X	8	X	24%	=	$1,845
Month 4	$9,533	X	8	X	24%	=	$2,288
Month 5	$11,821	X	8	X	24%	=	$2,837
Month 6	$14,658	X	8	X	24%	=	$3,518
Month 7	$18,176	X	8	X	24%	=	$4,362
Month 8	$22,538	X	8	X	24%	=	$5,409
Month 9	$27,948	X	8	X	24%	=	$6,707
Month 10	$34,655	X	8	X	24%	=	$8,317
Month 11	$42,972	X	8	X	24%	=	$10,313
Month 12	$53,285	X	8	X	24%	=	$12,789
Month 13	$66,074	X	8	X	24%	=	$15,858
Month 14	$81,932	X	8	X	24%	=	$19,664
Month 15	$101,595	X	8	X	24%	=	$24,383
Month 16	$125,978	X	8	X	24%	=	$30,235

Month 17	$156,213	X	8	X	24%	=	$37,491
Month 18	$193,704	X	8	X	24%	=	$46,489
Month 19	$240,193	X	8	X	24%	=	$57,646
Month 20	$297,839	X	8	X	24%	=	$71,481
Month 21	$369,321	X	8	X	24%	=	$88,637
Month 22	$457,958	X	8	X	24%	=	$109,910
Month 23	$567,868	X	8	X	24%	=	$136,288
Month 24	$704,156	X	8	X	24%	=	$168,997

A average 3% return is not hard to achieve with a solid trading strategy, and as you can see from the above, that is what can make your dreams a reality.

Developing Your Own Trading System

If you are interested in developing your own trading system, here are some necessary guidelines that will assist you in building your trading account on a rock solid foundation, rather than on sand.

First of all, it should work in any market. Obviously, market conditions change. So if your trading strategy only works in certain market conditions, then at the least you need another strategy to use when the first one is not effective, or you will have to sit idle when the market is not in your favor, or suffer the financial consequences. A better choice would be to have one strategy robust enough to work in all market conditions. For this to be true, it must be built on sound principles. Usually, the simpler the strategy, the more effective it is under varying market conditions as well.

So how do you know if it will work in all market conditions? If you have software that will allow you to back test your strategy, an effective way to do this would be to test it separately during different market conditions. For example, if you were to do a back test over a three year period, that period may very well contain Bull, Bear and Lamb (sideways) conditions. The results from that test would hardly provide a model of what you could expect from your strategy.

A better approach would be to first overview market conditions and find a Bull market, do a back test for that time period only. Then do the same for a Bear and Lamb market. Next it should work the same in multiple time frames. That is, you should get roughly the same results whether you were testing daily or weekly data etc. A system that passes these tests should prove to be sound.

If you don't have the resources to back test with, then paper trading would be the next course of action to follow, although obviously, you will be trading in real time and thus testing only one market condition. If you have back tested it successfully, the next step would still be to paper trade with it before risking capital.

The most important factor though, whether developing your own or using someone else's trading system, is to understand the principles it is built upon. To simply know to buy or sell when a threshold has been exceeded on an indicator does not provide you with enough information to trade effectively or safely. Only when you thoroughly understand how a system works can you be sure you are using it effectively, or know where you need to modify it, if it is not working as well as expected, or when market changes demand it.

Conclusion

So there you have it. These are the basics to ensuring not only the survival of your trading account, but these principles should also enhance the effectiveness of your trading system as well. Now, as important as money management is, it isn't the entire key to profitable trading. If your trading strategy isn't built on sound principles, doesn't have a proven track record of being able to provide consistent returns in any market or time frame, then not even intelligent money management will save it.

How do you find a good trading system? A good approach is the "Franchise" method. In business, someone who buys a franchise has a much greater chance in succeeding in their business than someone who starts from scratch on their own. Why? Because they are copying how someone else has already succeeded. A franchise provides you with a proven game plan, one that a business owner has already used to be successful. It provides detailed, step-by-step instructions on how to do what he did to succeed. You can do the same with trading. Find out what has worked for others.

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