Position Sizing

This article was originally published with the title Understanding Position Sizing by the Australian Investors Association in The Investors Voice June 2014.

Position sizing is a concept used extensively in trading to control risk. It is very important for trading in highly leveraged instruments like futures, but has a role in risk management in any form of trading.

Position sizing is much less used or even understood by investors, yet it can have a very important role to play in the control of risk in any form of investing. When investing in stocks, position size means the number of shares we should buy.

To understand why it is important to control risk, consider table from chapter 2 of my book *Building Wealth in the Stock Market*:

% Loss of Capital	% Gain on Remaining Capital Needed to Recover
10	11
20	25
30	43
40	67
50	100
60	150
70	233
80	400
90	900

What this shows is that once we lose more than about 20% of our capital, it becomes very difficult to recover and may certainly take a long time. This is, of course, what happens when investors sell out in despair near the bottom of a bear market. However, on a smaller scale it applies to any stock on which we make a big loss: we must make a far larger gain on another stock or stocks just to get back to where we started.

This is where position sizing comes in; its aim is to never make a large loss on any investment that fails to perform for us. It is the mechanism by which we implement one of the oldest adages in investing: let profits run, but ***cut losses quickly***. Of course, if we are great investors who never make poor investments and we never encounter another bear market, it may be academic. If you find such an investor or a market without cycles, please let me know.

The idea behind position sizing is to calculate the number of shares we can buy, such that we control the maximum risk we take on the investment. To do this, we first need to know four things:

1. Our total capital. This is simply the amount of capital we have for investing in stocks. It is the total value of all our stock holdings (number of shares multiplied by the last price they traded on the market – NOT the price we paid for the shares) plus our cash reserve.

2. The price at which we hope to be able to buy the stock.
3. Our stop-loss price. This is the price that we determine is where we would be wrong. There are many ways to do this. The principle is this: When we buy a stock we must have a clear idea of what we expect to happen that will make the investment profitable for us. If we can define this clearly, then we can also define when it is not happening. This is the price at which we are wrong about what we expect to happen and is our stop-loss i.e. where we cut and run.
4. What percentage of our capital we are prepared to risk on the investment.

There is one caveat here. Position sizing only works effectively if we have a sufficient amount of capital to invest. If we only have $10,000 to $30,000 total investment capital, the percentage risked will need to be unrealistically high. Effectively, the minimum capital for position sizing to work well is possibly $50,000, but $100,000 would be better.

Let us assume that:

1. Our total investment capital is $400,000.
2. We hope to buy a stock at $6.15.
3. Our stop loss is at $5.10.
4. The maximum we are prepared to risk on the investment is 1% of capital.

From this information we make the following calculation:

The maximum amount we are prepared to risk is $400,000 × 1% = $4,000.

The maximum amount we are risking on each share is our buying price less the stop-loss price, which is $6.15 - $5.10 = $1.05.

If we then divide the maximum risk we are prepared to take by the risk back to our stop-loss on each share, we can calculate the maximum number of shares we may buy, which in this case is $4,000 ÷ $1.05 = 3,810 shares.

To understand this calculation, assume that after we buy 3, 810 shares at $6.15, the price falls to $5.10, when our stop-loss is hit and we sell. We will have lost $6.15 - $5.10 = $1.05 on each share, or a total of 3,810 × $1.05 = $4,000, which is 1% of our capital.

There are some obvious caveats about this calculation of position size:

1. We have ignored brokerage to keep the explanation of the idea simple. In practice, if brokerage is a small percentage of the price and we do not make a great number of transactions, as a trader would do, it can be ignored.
2. We have assumed that we can actually buy at the price we estimated and that we can sell exactly at our stop-loss price. This is rarely the case. Sometimes it is in our favour when buying and or selling, but more often it is not, especially if a stop-loss is hit. Make an allowance for this when selecting the maximum percentage of capital to be risked on any investment.

Now, change one of the assumptions:

Our stop loss is at $5.90, instead of $5.10

This means that we are now risking only $6.15 - $5.90 = $0.25 per share if the price falls to our stop-loss.

On this changed assumption, our position size, the maximum number of shares that we may buy without risking more than 1% of our investment capital = $4,000 ÷ $0.25 = 16,000 shares.

Here I used a very close stop-loss price to show that if our stop-loss is relatively near to our buying price, we may buy a large parcel of shares (16,000 in the second calculation) without risking more than 1% of capital. However, if our stop-loss is much further below our buying price, we may only buy a much smaller parcel of shares (3,810 in the first calculation) without risking more than 1% of capital.

This is the key thing to understand about position sizing. No matter where our stop-loss is relative to the buying price, the position size changes accordingly: the wider the stop-loss, the smaller the number of shares and the closer the stop-loss, the larger the number of shares.

However, it is not quite that simple. If we consider our two examples:

3,810 shares costing $6.15 each amount to an all-up investment of $23,432. This is $23,432 ÷ $400,000 = 5.9% of our investment capital. That is not a very aggressive allocation of capital and if we invested all our capital in a similar way, we would be holding $400,000 ÷ 23,432 = 17 stocks (or 100 ÷ 5.9 = 17). We would probably have a diversified portfolio.

Now consider the other example:

16,000 shares costing $6.15 each amount to an all-up investment of $98,400. This is $98,400 ÷ $400,000 = 24.6% of our investment capital. This is aggressive in the extreme and means we would only hold four stocks if the balance of our capital was invested the same way. We have no diversification.

What these two examples reveal is that position sizing is one thing but it must be considered in the overall context of our investment risk management. While in both cases the amount at risk is the same 1% of our capital, in only one case will we be well-diversified. Diversification is a major risk mitigation strategy and theory suggests that we should have between at least 15 and not more than 30 stocks in our portfolio. This gives a range of between 100 ÷ 30 = 3.3% and 100 ÷ 15 = 6.7% of capital invested in each stock.

This means that a complete position sizing strategy must be seen as part of an overall risk strategy that also considers diversification. Our position size calculation gives us the maximum number of shares we can buy. However, where this exceeds the percentage of capital that our diversification strategy allow us to invest in a stock, that would determine the position size and our risk in the investment, if the price falls back to our stop-loss, would be less than the maximum we are prepared to accept.

If our diversification strategy is that any one investment should not exceed 5% of our investment capital, then we should not invest more than $400,000 × 5% = $20,000 in any one stock. The stock we are intending to buy has an estimated cost of $6.15 per share, which means we should not buy

more than $20,000 ÷ $6.15 = 2,352 shares. In ***both*** the examples used earlier, we would only buy this number of shares.

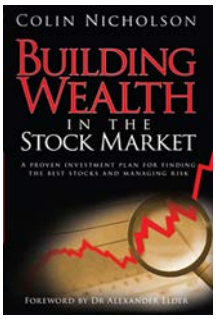
In that case, the percentage of our capital that we would be risking if the price fell back to our stop-loss would be:

First example = 2,352 × $1.05 = $3,415, which is $3,415 ÷ $400,000 = 0.85% of our total investment capital instead of the 1% of our total investment capital that is the maximum we are prepared to risk.

Second example = 3,252 × $0.25 = $813, which is $813 ÷ $400,000 = 0.20% of our total investment capital instead of 1% of our total investment capital that is the maximum we are prepared to risk.

A significant insight from this discussion should be an increased understanding that many parts of our investment plan are interconnected in some way and our investment decision-making is inevitably a balancing of strategies.

I have distilled the logic of the position sizing and diversification calculations in a spreadsheet that is available on my free website www.bwts.com.au on the Data and Other Files page that is on the Free Resources drop-down menu. It uses the risk parameters that I use in my investment plan, outlined in my book *Building Wealth in the Stock Market*, but can easily be adapted for different investment plans.



My complete investment plan is set out in my book Building Wealth in the Stock Market, which may be purchased from my website www.bwts.com.au on the Buy Books drop-down menu for the recommended retail price of $65, postage free to Australian addresses.

Position sizing and diversification are two of the risk management strategies discussed in the book. In it I show how they are integrated into a total investment plan that includes the all-important management of investments through to their sale, which is the true secret to investing successfully.

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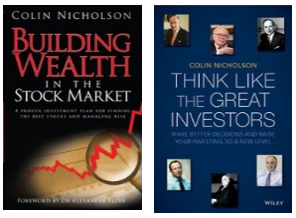

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