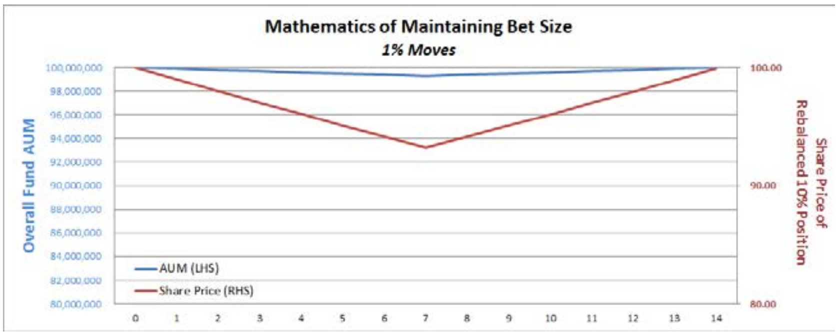
The Mathematics of Maintaining Bet Size

As we wrote in "Half-hearted is half-minded – December 2017" we aren't big fans of dipping our toes in the water when entering a position, nor of timidly reducing when exiting. If we are right more often than we are wrong, it might feel better to inch in or inch out of a position, but it is a suboptimal strategy. Our bet size should be motivated by some probabilistic, risk-adjusted, annualised expected return; not by when or where we bought the stock. Similarly, we aren't big fans of dollar-cost averaging (DCA), particularly when it does not consider risk and reward. But this is not an article about dollar-cost averaging. It is an article about losing big money in a position, how to manage that, and an interesting (and relevant) nuance of mathematics that is revealed when things get really bad.

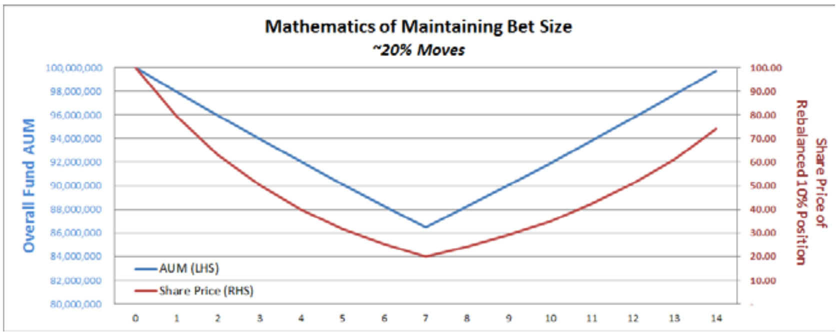
Firstly, we should be clear that we shouldn't blindly cling to losers. Loss aversion leads to a disposition effect, which is a recipe for value destruction. Negative outcomes are a required part of our process, and we should embrace them. Philosophically, there is no difference between a realised or unrealised loss; and the only reason to own anything (whether it is a huge winner or a huge loser, or somewhere in the middle) is what we think will happen to the stock tomorrow, not what happened yesterday.

With that, there is an interesting nuance to those situations where good long-term stories blow up in some short time horizon, but where long-term prospects remain strong. More than half the battle is determining (in real time) whether or not these blow-ups are still good long-term stories. If they are, however, there is an interesting nuance. Given the nature of position sizing, if we maintain our % exposure as the stock price falls before recovering, we can actually come out ahead even if the stock price doesn't fully recover.

It isn't so easy to visualise with small moves. The chart below shows a 1% down move (in a 10% position) seven periods in a row, and a subsequent 1% up move for seven days thereafter.



Taking it to extremes, however, reveals the phenomenon. Seven consecutive 20% moves lower gets us to an 80% loss in the share price. As long as we stay fully sized all the way down, then when (or rather, if) we subsequently see seven consecutive 20% up moves, the stock only gets back part way, and is still down ~25%. Yet the fund is flat.



In other words, if we maintain exposure to a 10% position where the stock drops 80%, and recovers back to where it started, the fund itself is up 3.4% in the process.