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Not all volatility is created equal

ⓘ Key take-aways

☐ High downside volatility in a share is undesirable because it can lead to permanent loss, and bigger losses require exponentially bigger subsequent gains to get back to break-even.

☐ High upside volatility, which can result after a share has sold off sharply and is not likely to fall much further (leaving it with an extreme dislocation between its share price and fundamental value), is very desirable for its potential returns, but happens rarely.

☐ We aim to recognise and exploit these volatilities in order to enhance gains and limit losses in client portfolios, so that total gains are much bigger than total losses. Outperformance can be achieved through a portfolio's superior win/loss ratio (total gains/total losses), so that the actual number of winning trades doesn't have to exceed losing trades.

☐ As famous investor George Soros explained: *"It's not whether you're right or wrong, but how much money you make when you're right and how much you lose when you're wrong."*

Mathematician Ed Thorp had an intuitive sense for numbers. Thorp used this intuitive sense to beat the game of blackjack and would later use his mathematical prowess to become an investor of some celebrity, racking up among the most impressive returns in the industry over a multi-decade period.[1] He had the mental dexterity to observe and fully appreciate the very small pattern signature in mathematical constructs, like spotting anomalies across tight series of numbers.

Ed Thorp is well known and respected among the hedge fund community as being an accomplished money manager. What he is not often credited with was his ability to spot both potential greats (he was an early investor and proponent of Warren Buffet) and more presciently, frauds.

Thorpe identified Bernie Madoff as a fraud almost a decade before the world would come to know of his now-infamous shenanigans. "Back in 1991, I was invited to review the portfolio of McKinsey and Co. back in New York, and they had a profit-sharing and a pension plan," he said. "But there was one very strange investment, they had it printed out one or two percent a month, every month. They had a record going back into the late 1960s, supposedly, and I said,

[1]Since the late 1960s, Thorp has used his knowledge of probability and statistics in the stock market to discover and exploit a number of pricing anomalies in the securities markets, making a significant fortune in the process. His first hedge fund was Princeton/ Newport Partners from 1969 to 1989, based on Market Neutral Derivatives Hedging. His second hedge fund was called Ridgeline Partners, and it ran from August 1994 through September 2002 based on Statistical arbitrage. Thorp reported that his personal investments yielded an annualised 20% rate of return averaged over 28.5 years.

'How do they do this?' And they said, 'Well, we don't know exactly, they tell us that they won't explain what their method is but we can show you our accounts."

Thorp discovered that the options strategy Madoff claimed to be running should lose in a down month, yet Madoff won every month. "And the reason they went up every month was because a mysterious trade was put on, involving S&P 500 index options, and it was always in the right direction." It was the absence of volatility in the breadcrumbs of Madoff's returns that was conspicuous to Thorp, ultimately leading him to conclude that something was horribly amiss.

Expect volatility

Volatility is inherent in return series over time as sure as salt accompanies the solvent properties of seawater. They're kindred spirits.

A key part of our investment process considers the negative ramifications of excess volatility and how to avoid too much downside volatility, which leads to painful outcomes. Permanent loss is what happens when downside volatility becomes too much to recover from. Consider the drawdowns experienced in crypto currencies or profit-less tech over the last nine months – Bitcoin has lost 72% since November 2021, while the Goldman Sachs Future Growth Leaders Index ETF (GSFGL) has wiped out 45% of investor capital since listing in October 2021. The harsh reality now is that Bitcoin holders require a 257% increase from current prices to get back to the highs, and investors in the GSFGL ETF would need to see the index double just to break even.

Graph 1: Subsequent market return required to make up for loss
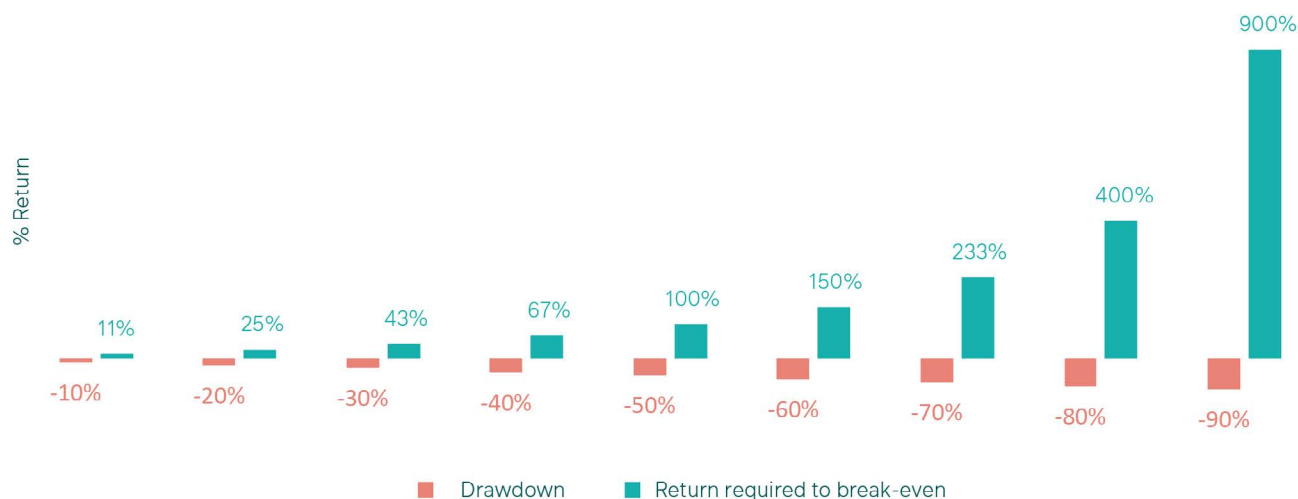
Source: M&G Investments

Graph 1 reflects the return required to break even after you have suffered a drawdown. These returns required scale exponentially, so if you've lost 10% of your portfolio, a return of 11% will get you to break-even; but if you've lost 90% of your portfolio value you will need a 900% return to get back to break even. After extreme drawdowns, the return requirements become so onerous that the distribution of returns drift towards option-style pay-off structures. The traded price of a security at that point is often viewed by investors as an option premium, not necessarily because the price will run down to nil (a concept known as theta decay in option theory), but rather due to the wide distribution of potential outcomes (or fat tails) embedded in prices. Intuitively, a wide distribution of outcomes will have the effect of increasing volatility, but there are instances where that volatility can be harnessed for the benefit of portfolios (detailed further below).

Closer to home, we witnessed a few of these dynamics in the months leading into the pandemic, with stock price dislocations reaching extremes. One such example was Sasol, which suffered a drawdown of 93% in the first three months of 2020, from a price of R323/share to R20.77/share at the trough.

When security prices rapidly dislocate from established anchors (a phenomenon we at M&G Investments refer to as an "episodic" event), it creates rare opportunities for outsized returns. Buying at this point is obviously not without risk, but with the right fundamentals and under the correct portfolio construction framework, these acquisitions can substantially enhance client returns.

Volatility for performance

"It's not whether you're right or wrong, but how much money you make when you're right and how much you lose when you're wrong."

— George Soros

In the investment world, "win rates" draw much attention, and indeed the proportion of winning trades to losers matters for portfolio returns, especially at the extremes. Portfolio returns are, however, dependent on both win rates and the extent to which wins outpace losses. Technically, portfolio returns can be deconstructed as follows:

☐ The win rate: The proportion of winning trades to total trades; and

☐ The win/loss ratio: The return from a winning trade versus the loss from a losing trade (expressed as a ratio). This can be better understood as the total amount of rands won for each winning trade versus rands lost on losing trades. Here, the size of every trade becomes important.

Many well-regarded money managers and traders (rightfully) overemphasise the win/loss ratio, as alluded to in the George Soros comment above. The idea that a money manager could get the majority of his trades wrong, yet still deliver above-market returns flies in the face of our intuitive understanding of what is required to win. But the trend is rather consistent among legendary investors: Soros is said to have a win rate of no more than 35%, while Stanley Druckenmiller estimates his win rate at about 50%.

Outperformance from a superior win/loss ratio is the other side of the coin in terms of the return required to break-even from a drawdown (as highlighted in Graph 1). The higher your win/loss ratio, the fewer trades you need to get right (all else being equal); said another way: as the win/loss ratio increases the win rate required decreases at an exponential rate. Graph 2 illustrates this relationship: With a higher win/loss ratio of 4.0, for example, you would need a win rate of only 20% to break even, whereas a lower win/loss ratio of just over 3.0 means you would require a higher win rate of 30% to break even.

Graph 2: Required win/loss ratio for break-even
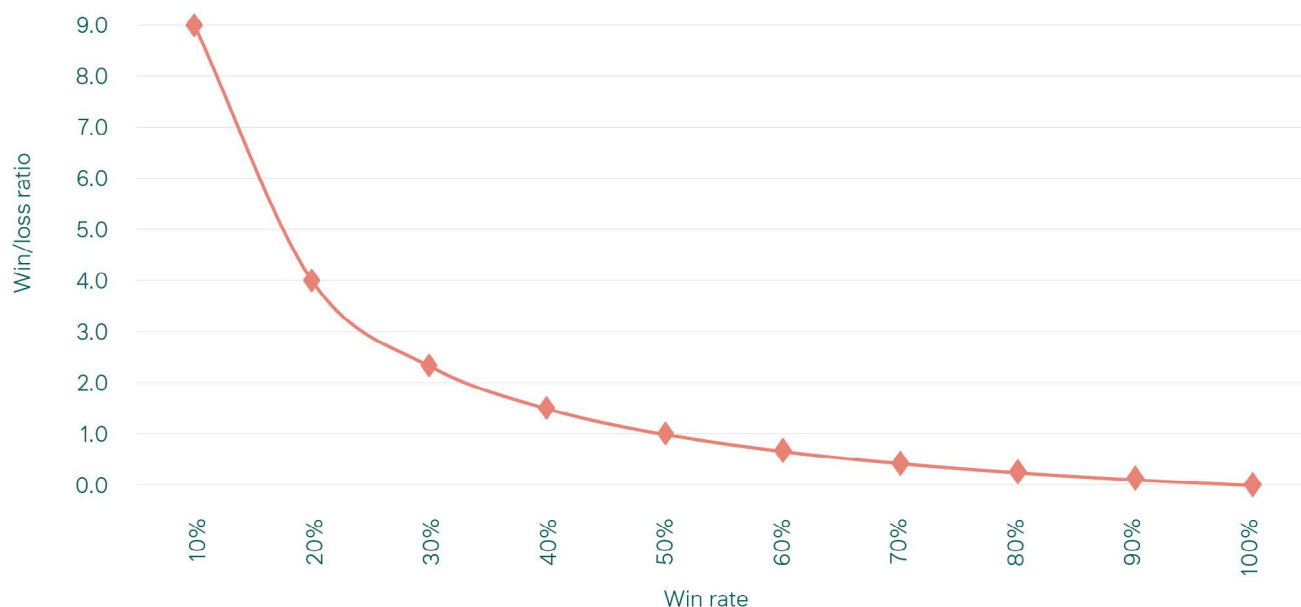
Source: M&G Investments

Seeking exposure to upside volatility

Volatility is a feature of return time series in the real world – that is probably something we can all agree on. In as much as downside volatility is feared and should be avoided, upside volatility can significantly improve return profiles. Ideally, portfolios should include securities which have the potential to deliver large, outsized returns against limited and known downside – this is an option pay-off structure, which in a portfolio can deliver enhanced returns because it now has exposure to volatility, but to the upside.

The Sasol example mentioned earlier illustrates the idea well: at its weakest price of R20.77/share in March 2020, Sasol embedded an option pay-off structure and subsequently went on to generate a return of some 1,800% to date. Portfolios holding the stock, like ours, have benefitted from the windfall return, the likes of which is only achievable when an untenable situation reaches a tipping point.

Hindsight is 20/20, and it is remarkably difficult to call the bottom on anything, even if you are nearly certain it will go up in the future. But there are moments in time when unique events give rise to untenable dislocations within the market. In portfolio construction, avoiding big downside potential is certainly important, but being aware of when big upside potential exists at reduced risk, and alert to its potential, could make all the difference in the world. ☐

Aadil joined M&G Investments in July 2013 as an Equity Analyst. In August 2018 he joined a global equity hedge fund in London, before returning to M&G Investments in January 2020 as Head of Equity Research. With 15 years' investment experience, Aadil's qualifications include a BCom degree (Hons, cum laude) from the University of Pretoria and a Masters in Finance degree from INSEAD. He is also a CFA charterholder.