Keeping risk in mind

Behavioural finance offers important lessons for risk managers by considering how investors experience loss, says Professor Thorsten Hens

Groundwork for modern risk management includes good knowledge both of the markets and investor psychology

He who dares wins, but not all the time. Attractive returns cannot be earned without taking on risk; but, in doing so, investors expose themselves to the danger that they might lose their capital. This is where risk management comes in. It keeps risk within acceptable boundaries.

Psychological research into the perception of risk reveals two types of mistakes that can upset the calculations of private investors at a stroke. First, investors can fall into psychological traps and so enter into unnecessary risks. Secondly, psychologists have found that traditional risk management does not measure risk in the way that investors experience it. Risk management focuses on keeping portfolio volatility in check, while most investors are disproportionately concerned about losses.

Diversification has always been central to risk management. As far back as the Talmud, we have been urged not to put all our eggs in one basket. These days, however, we have mathematical models that can keep risk to a minimum for a given level of return.

However, research suggests that investors have difficulty accepting the gift of diversification. Instead of diversifying according to mathematical criteria, they take an intuitive approach to portfolio composition. As a result, they combine risks which perform similarly and tend to weight all positions equally within their portfolios. It would be better to weight the investments according to the investor's risk profile. If investors divide their portfolio into equities or bonds, their choice of allocation will differ depending on how far, for example, the equities portion is broken down into sub-categories. If they are given a choice simply of equities and bonds, they will put less into equities than if the equity allocation is further sub-divided into domestic and international equities. This reflects the tendency for investors to equally weight all categories under consideration, a habit known as the splitting bias.

Another reason why investors do not diversify adequately is that they practise mental accounting. They are used to making a clear separation between their careers, families and hobbies in everyday life, and carry this form of mental accounting across to their finances. For instance, they might have three portfolios, one for bonds, one for equities and one for alternative investments. The mistake they make is to run a separate mental account for each and strive to avoid losses

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in each account. This hinders performance at the overall portfolio level. Returns are generally better where investors accept losses in one sub-account but make compensating gains in another.

In addition, most investors spread their portfolios between too few stocks. A study by the US National Bureau of Economic Research looked at 78,000 portfolios held with a US online bank. It found that investors had an average of just five stocks in their equity portfolios, even though every additional stock would have improved the risk-return profile. What's more, many investors are overly suspicious of foreign stocks and so do not include enough international diversification in their portfolios. This prejudice is known as home bias.

Finally, some investors fail to select their stocks clinically according to risk-return characteristics. Instead, they pick those with the most exciting success stories. Researchers call this the attention bias. But such stories can often be deceptive, attention-grabbing but actually containing little information of value. Studies have borne out what investment guru Warren Buffett has long been saying: over the long

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Rebalancing to keep asset allocation consistent is an important manoeuvre in risk management

term, neglected stocks with sound fundamentals deliver better returns than hyped stocks with high valuations. But for investors, conformism makes it tough to buy shares that no one else wants.

All risk managers know that financial markets constantly surprise. This is because the financial markets trade in future payouts from financial investments. Today's price changes reflect events that could not be anticipated yesterday. Consequently, investors face the same situation day after day: the probability today that an investment will move up or down is just the same as it was yesterday.

Rebalancing the portfolio

For this reason, investors who are sufficiently risk-tolerant should divide up their portfolios by asset class, according to their risk profile, and keep this allocation consistent over time. For instance, there is no point in raising the equity allocation, because it is impossible to predict where share prices will head next. If equity markets boom, swelling the equity allocation as they go, then investors should rebalance their portfolios by selling shares. Similarly, investors should buy more shares to restore the original balance if they have suffered losses. This means acting in an anti-cylical way, buying more shares when they are cheap and selling them when they are expensive.

In practice, however, it is psychologically difficult to achieve this rebalancing. Many studies have shown how investors are over-hasty in extrapolating trends. Sadly, the same goes for analysts too, making it hard to form a neutral opinion. In the throes of cognitive biases such as trend chasing, our emotions can override any amount of hard-headed calculation. Gains bring satisfaction, happiness or even euphoria, raising risk tolerance. Losses bring uncertainty, fear and frustration, which reduce our willingness to bear risk. Consequently, investors tend to act in a pro-cyclical way. The mood in a bull market can be summed up as one of greed, while in a bear market fear dominates.

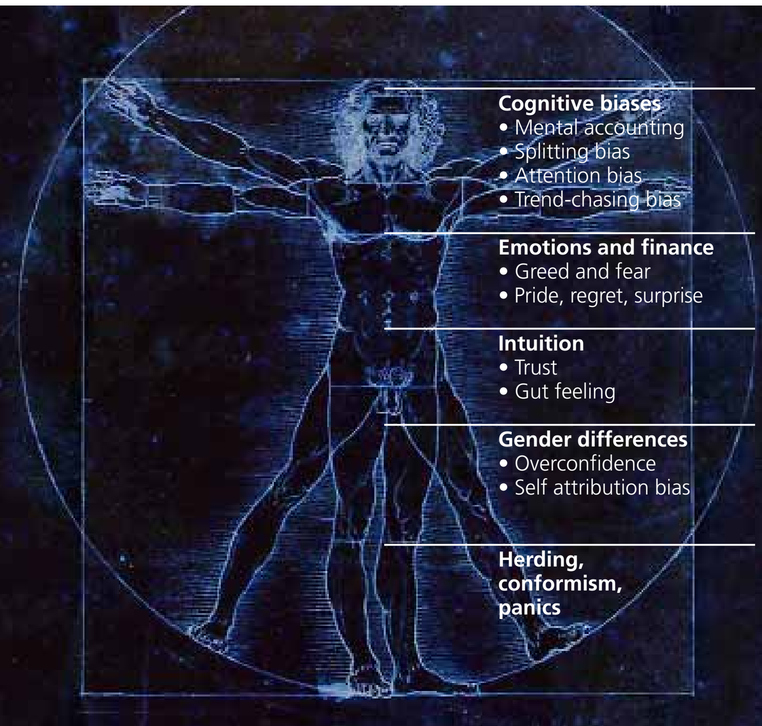
Emotional investors even adjust their portfolios after successes and disappointments that have nothing to do with the financial markets as they allow their moods to dictate their risk behaviour. For example, when a national football team is knocked out of a championship, a wave of selling often assails the respective stock market on the following day. This mix of delusion and emotion led the investors at the US online bank mentioned above to turn over three-quarters of their assets each year – more than would be rationally needed, and incurring higher costs along the way.

Measuring risk

Benjamin Graham, the father of fundamentals-based equity analysis, declared eighty years ago that investors are their own worst enemy. He was only partially right. Investors do indeed make psychological mistakes, but good risk management can help avoid most of them. The problem remains, however, that risk management often concentrates on risk metrics that are unsuited to investors.

So how can risk be measured? This is a matter of asking, first, how frequent losses are likely to be, and, secondly, how severe. Volatility has been the conventional measure of risk ever since Harry Markowitz first expounded his modern portfolio theory in 1952, but it is unsuitable for many investors. Volatility is defined as how far a value deviates from the mean, regardless of whether this deviation is positive or negative. But such a measure is only meaningful if the investment in question delivers a return that conforms to the statistical model of normal distribution, in which case deviations to the upside and the downside are similar. What's more, extreme deviations from the expected return are very rare in a normal distribution. In reality, the normal distribution model approximates very poorly with stock and bond returns and even less well to those of commodities, hedge funds or real estate. Most investors would be ill-advised to use volatility as a guide when deciding on their allocation to alternative investments, given that the risk of extreme events is underestimated by this measure.

Psychological risk researchers have therefore come up with an alternative to volatility that originated in the nuclear power debate, of all places. During the 1960s, physicists convinced their governments of nuclear energy's favourable risk-return profile, but these governments could not understand why most of the public took a different view. The US administration asked scientists at Carnegie Mellon University to investigate this discrepancy. What they found was that the way physicists measured risk was different from the approach taken by the general public. The physicists were prepared to accept the risk of a nuclear disaster, provided it was unlikely enough. The general population, on the other hand, envisaging what might happen in such an event, allowed the severe consequences to overshadow the small



Mapping the investor

Investors are prone to a whole gamut of psychological errors. Gender also plays a part. Men are more likely than women to overestimate their abilities and accept excessively high risks, resulting in large-scale portfolio churning. Men are also more likely to attribute gains to their own personal ability, encouraging them to strike out even more boldly. When they suffer losses, however, they look for others to blame. The phenomenon is known as the self-attribution bias.

Not all psychological patterns of behaviour have negative effects. Many investors like to rely on their gut feeling, or intuition, and often this is no bad guide. Intuitive feelings tend to be based on facts that are observable over the long run, rather than on short-term news. This means that intuitive investors avoid too much turnover in their portfolios.

Regardless of gender or intuition, almost all investors, particularly in turbulent times, tend to fling all other considerations to the winds and run with the crowd. This herding is the biggest cause of speculative bubbles on the financial markets, which inflate and burst around every three to four decades (1843 to 1846, 1870 to 1873, 1923 to 1929, 1963 to 1967 and 1996 to 2000). Basically, each generation produces its own bubble; the most recent will go down in history as the baby-boomer bubble.

likelihood that they would actually occur. This overweighting is one of the cornerstones of the psychological risk research into prospect theory developed by Nobel laureates Daniel Kahneman and Amos Tversky.

Overreacting to losses

The other, equally important, element of this theory is that investors typically pursue a concrete investment objective with their portfolio. If they fall short of this target, they regard this as a loss, while any return over this threshold is seen as a gain. However, investors do not look at losses and gains of the same amount in an equal light, as the concept of volatility presupposes. In reality, investors have twice the emotional reaction to losses. For most, it would take a profit of at least €200,000 to make up for a loss of €100,000. Consequently, most people are prepared to pay more to protect their capital than their attitude to price fluctuations would suggest. That is where widely used structured products with capital protection come in.

Kahneman and Tversky's psychological risk measure links the overweighting of small probabilities to risk perception. It produces a more conservative approach to investment behaviour among the majority of investors than when volatility is used. And, unlike volatility, this psychological risk measure is not the same for all investors but is a characteristic of the individual investor; each investor decides individually how concerned they are about unlikely events and how much they would be hurt by losses.

The differences between investors go so far that some become positively risk-loving once they have made a loss. Rather than resigning themselves to a certain loss, they are apt to raise their stakes in the hope of clawing their way out of the red. A classic example is Nick Leeson, the derivatives trader who brought down Barings Bank in 1995 when he lost $1.4 billion. He said in court that he started gambling on the stock market to try to make good his mistakes and save the bank. We sometimes see the same thing in ice hockey: if a team is behind in the closing stages of a game, the coach can raise the risk and replace his goaltender with a skating forward. This risk behaviour presupposes that the worst-case scenario has already occurred, and while this may be true in ice hockey, it certainly was not the case for Barings Bank.

For all these reasons, practitioners of modern risk management need to take account of psychological research. Their work must be grounded in a good knowledge both of the markets and investor psychology. They should also stay aware of the psychological traps that lie in wait for investors during the ups and downs of the financial markets and learn to apply the risk measures that really count for investors. /