

# Behavioural finance



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Understanding how the mind can help  
or hinder investment success

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**For investment professionals only – not for retail investors.**

# Why bother with behavioural finance?

This document aims to provide a practical introduction to general tenets of behavioural finance and highlights the potential lessons for successful investing. The behavioural biases discussed in this guide are ingrained aspects of human decision-making processes. Many of them have served us well as ways of coping with day-to-day choices. But, they may be unhelpful for achieving success in long-term activities such as investing. We are unlikely to find a 'cure' for the biases, but if we are aware of the biases and their effect, we can possibly avoid the major pitfalls.

Behavioural finance holds out the prospect of a better understanding of financial market behaviour and scope for investors to make better investment decisions based on an understanding of the potential pitfalls. This guide focuses on the latter issue. Advisers can learn to understand their own biases and also act as a behavioural coach to clients in helping them deal with their own biases.



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# What is behavioural finance?

Behavioural finance studies the psychology of financial decision-making. Most people know that emotions affect investment decisions. People in the industry commonly talk about the role greed and fear play in driving stock markets. Behavioural finance extends this analysis to the role of biases in decision making, such as the use of simple rules of thumb for making complex investment decisions. In other words, behavioural finance takes the insights of psychological research and applies them to financial decision-making.

Behavioural finance has been growing over the last twenty years specifically because investors rarely behave according to the assumptions made in traditional financial and economics theory.

## Traditional vs. behavioural finance

Over the past fifty years established finance theory has assumed that investors have little difficulty making financial decisions and are well-informed, careful and consistent. The traditional theory holds that investors are not confused by how information is presented to them and not swayed by their emotions. But clearly reality does not match these assumptions.

Behavioural finance has been growing over the last twenty years specifically because of the observation that investors rarely behave according to the assumptions made in traditional finance theory.

Behavioural researchers have taken the view that finance theory should take account of observed human behaviour. They use research from psychology to develop an understanding of financial decision-making and create the discipline of behavioural finance. This guide summarises the findings of these ground-breaking financial theorists and researchers.

# How behavioural biases affect investment behaviour

Research in psychology has documented a range of decision-making behaviours called biases. These biases can affect all types of decision-making, but have particular implications in relation to money and investing. The biases relate to how we process information to reach decisions and the preferences we have.<sup>1</sup>

The biases tend to sit deep within our psyche and may serve us well in certain circumstances. However, in investment they may lead us to unhelpful or even hurtful decisions. As a fundamental part of human nature, these biases affect all types of investors, both professional and private. However, if we understand them and their effects, we may be able to reduce their influence and learn to work around them.

A variety of documented biases arise in particular circumstances, some of which contradict others. The following sections discuss the key biases and their implications for investors and advisers.

Established financial theory focuses on the trade-off between risk and return. However, behavioural finance suggests investors are overconfident with respect to making gains and oversensitive to losses.

<sup>1</sup> Shefrin, Hersh, 2000. *Beyond Greed and Fear: Finance and the Psychology of Investing*. Chapters 1-3.

# Overconfidence

Psychology has found that humans tend to have unwarranted confidence in their decision making. In essence, this means having an inflated view of one's own abilities.

This trait appears universal, affecting most aspects of our lives. Researchers have asked people to rate their own abilities, for example in driving, relative to others and found that most people rate themselves in the top third of the population. Few people rate their own abilities as below average, although obviously 50% of all drivers are below average. Many studies – of company CEOs, doctors, lawyers, students, and doctors' patients – have also found these individuals tend to overrate the accuracy of their views of the future.<sup>2</sup>

In practical terms, human beings tend to view the world in positive terms. While this behaviour can be valuable – it can help you recover from life's disappointments more quickly – it can also cause an ongoing source of bias in money-related decisions.

2 Barber and Odean (1999), 'The courage of misguided convictions' *Financial Analysts Journal*, November/December, p47.

## Overconfidence and investing

Overconfidence has direct applications in investment, which can be complex and involve forecasts of the future. Overconfident investors may overestimate their ability to identify winning investments. Traditional financial theory suggests holding diversified portfolios so that risk is not concentrated in any particular area. 'Misguided conviction' can weigh against this advice, with investors or their advisers 'sure' of the good prospects of a given investment, causing them to believe that diversification is therefore unnecessary.

Overconfidence is linked to the issue of control, with overconfident investors for example believing they exercise more control over their investments than they do. In one study, affluent investors reported that their own stock-picking skills were critical to portfolio performance. In reality, they were unduly optimistic about the performance of the shares they chose, and underestimated the effect of the overall market on their portfolio's performance.<sup>3</sup> In this simple way, investors overestimate their own abilities and overlook broader factors influencing their investments.

## Too much trading

Investors with too much confidence in their trading skill often trade too much, with a negative effect on their returns. Professors Brad Barber and Terry Odean studied US investors with retail brokerage accounts

3 Werner De Bondt (1998), 'A Portrait of the Individual Investor,' *European Economic Review*.

and found that more active traders earned the lowest returns.<sup>4</sup> The table shows the results for the most and least active traders. For the average investor switching from one stock to another, the stock bought underperformed the stock sold by approximately 3.0% over the following year. Whatever insight the traders think they have, they appear to be overestimating its value in investment decisions.

Portfolio turnover and return

|                          | Mean monthly turnover | Average annual portfolio return |
|--------------------------|-----------------------|---------------------------------|
| 20% least active traders | 0.19%                 | 18.5%                           |
| 20% most active traders  | 21.49%                | 11.4%                           |

Source: Brad Barber and Terrence Odean (1999) 'The courage of misguided convictions' *Financial Analysts Journal*, November/December, p. 50.

Skill and luck

Overconfidence may be fuelled by another characteristic known as 'self-attribution bias'. In essence, this means that individuals faced with a positive outcome following a decision, will view that outcome as a reflection of their ability and skill. However, when faced with a negative outcome, this is attributed to bad luck or misfortune. This bias gets in the way of the feedback process by allowing decision-makers to block out negative feedback and the resulting opportunity to improve future decisions.

Advisers and overconfidence

Advisers need to consider the potential for overconfidence in themselves and their clients. Clients can be counselled against trading too much. Advisers should consider carefully the outcomes of past investment decisions, making an honest assessment of what went well and what did not. Lessons can be learned for future decisions.

4 Brad Barber and Terrence Odean (1999) 'The courage of misguided convictions' *Financial Analysts Journal*, November/December, pp 41-55.



# Loss aversion

## Attitudes to risk and reward

Established financial theory focuses on the trade-off between risk and return. Risk from this perspective means variability of outcomes and riskier investments should, broadly speaking, offer higher rates of return as compensation for higher risk. The theory assumes that investors seek the highest return for the level of risk they are willing and able to bear. Financial advisers often ask clients to complete a risk attitude questionnaire to establish their attitude to risk, and consider issues such as investment time horizon and wealth levels to establish risk tolerance. Risk tolerance drives the types of investments they recommend for the investor.

## Fear of loss

Behavioural finance suggests investors are more sensitive to loss than to risk and return. Some estimates suggest people weigh losses more than twice as heavily as potential gains. For example, most people require an even (50/50) chance of a gain of £2,500 in a gamble to offset an even chance of a loss of £1,000 before they find it attractive.<sup>5</sup>

The idea of loss aversion also includes the finding<sup>6</sup> that people try to avoid locking in a loss. Consider an investment bought for £1,000, which rises quickly to £1,500. The investor would be tempted to sell it in order to lock-in the profit. In contrast, if the investment dropped to £500, the investor would tend to hold it to avoid locking in the loss. The idea of a loss is so painful that people tend to delay recognising it.

More generally, investors with losing positions show a strong desire to get back to break even. This means the investor shows highly risk-averse behaviour when facing a profit (selling and locking in the sure gain) and more risk tolerant or risk seeking behaviour when facing a loss (continuing to hold the investment and hoping its price rises again).<sup>7</sup>

### **Advisers and loss aversion**

Advisers have a key role in helping clients deal with loss aversion and contain their desire to sell winners and hold losing investments. The adviser can help the client evaluate whether the investment still has good future prospects and whether it is still suitable for the client's circumstances.

## The disposition effect

Professors Shefrin and Statman developed the idea of loss aversion into a theory called the 'disposition effect', which indicates that individuals tend to sell winners and hold losers. In later research, Professors Barber and Odean tested this idea using data from a US retail brokerage. They found that investors were roughly 50% more likely to sell a winning position than a losing position, despite the fact that US tax regulations make it beneficial to defer locking in gains for as long as possible, while crystallising tax losses as early as possible. They also found that the tendency to sell winners and hold losers harmed investment returns.

6 Barber and Odean (1999) p42.

7 Daniel Kahneman and Amos Tversky (1979) 'Prospect Theory: An analysis of decision making under risk' *Econometrica* 47:2, pp. 263-291.

# The problem of inertia

## Regret avoidance

Inertia means that people fail to get around to taking action, often even on things they want or have agreed to do. A related issue is a tendency for emotions to sway you from an agreed course of action – ‘having second thoughts’. The human desire to avoid regret drives these behaviours. Inertia can act as a barrier to effective financial planning, stopping people from saving and making necessary changes to their portfolios.

A fundamental uncertainty or confusion about how to proceed lies at the heart of inertia. For example, if an investor is considering making a change to their portfolio, but lacks certainty about the merits of taking action, the investor may decide to choose the most convenient path – wait and see. In this pattern of behaviour, so common in many aspects of our daily lives, the tendency to procrastinate dominates financial decisions.

## Overcoming inertia with an autopilot

In recent years behavioural researchers have designed ‘autopilot’ systems to counteract inertia.

For example, in the realm of retirement planning it has been observed that many individuals fail to join their company pension plan, possibly as a result of inertia. Changing the pension scheme so that employees are automatically enrolled in the scheme, while retaining a right to opt out, tends to boost take up rates considerably. In effect, the automatic enrolment approach puts inertia to a positive use. Automatic enrolment is planned for use in the UK’s new pension regulations, due to be implemented in 2012.

Individuals in pension plans are also often found to be saving at low rates that are unlikely to generate the levels of retirement income the individuals would hope for. One study<sup>8</sup> found that asking members to pre-commit to future increases in their pension contributions was an effective way of raising contributions.

### Autopilots in practice

Professors Richard Thaler and Shlomo Benartzi were asked to assist a small US manufacturing firm when management became concerned about the low levels of pension contributions most employees were making.

Employees were invited to meet a financial planner and review their contributions. Where the contributions looked too low to meet the employee's retirement income target, they were offered the possibility of making a one off increase or joining a structured savings plan.

Under the plan, the members commit to future rises in contribution rates, timed to coincide with regular pay rises. This means the 'pain' of saving more is deferred and the link to pay rises means take-home pay doesn't fall even as savings rates increase.

The experiment proved successful. Around 90% of employees met with the financial planner and 25% accepted the advice to increase their savings immediately. Of the remainder, 78% chose to join the plan and most stayed in the plan for the next four years. By the end of the plan, the participants were saving more, on average, than the other groups of employees.

Richard Thaler and Cass Sunstein, 'Nudge: Improving decisions about health, wealth and happiness'(2008), pp. 112-115.

8 Richard Thaler and Cass Sunstein, *Nudge: Improving decisions about health, wealth and happiness* (2008), pp. 112-115.

## Autopilot approaches to investing

Autopilot approaches can also have relevance in investing, such as taking a disciplined approach to portfolio rebalancing, or a commitment to regular monthly savings. Such disciplined approaches – often called ‘commitment devices’ by behavioural economists – can help investors avoid biases like overconfidence and promote rational investor behaviour.

In terms of rebalancing, using a regular schedule for guiding decisions can help investors to avoid being swayed by current market conditions, recent performance of a ‘hot’ investment or other fads. It results in a regular strategy that sells out of markets or investments that have recently outperformed and adds to markets or investments that have lagged. Regular investing, the process of ‘pound cost averaging, also helps as the investor tends to accumulate more units or shares of an investment when markets are low than when they are high.

### **Advisers and inertia**

Savings schemes, pound cost averaging and automatic portfolio rebalancing are autopilot approaches that can be used to help clients overcome inertia and meet their financial goals.

# Constructing portfolios

## Framing

Finance theory recommends we treat all of our investments as a single pool, or portfolio, and consider how the risks of each investment offset the risks of others within the portfolio. We're supposed to think comprehensively about our wealth. Rather than focusing on individual securities or simply our financial assets, traditional financial theory believes that we consider our wealth comprehensively, including our house, company pensions, government benefits and our ability to produce income.

However, human beings tend to focus overwhelmingly on the behaviour of individual investments or securities. As a result, in reviewing portfolios investors tend to fret over the poor performance of a specific asset class or security or mutual fund. These 'narrow' frames tend to increase investor sensitivity to loss. By contrast, by evaluating investments and performance at the aggregate level, with a 'wide' frame, investors tend to exhibit a greater tendency to accept short-term losses and their effects.

## Mental accounting

Our psychological self thinks about money and risk through 'mental accounts' – separating our wealth into various buckets or pools. We often base these pools on goals or time horizon (such as 'retirement' or 'school fees'). Accounts can also vary in risk tolerance, investing some in risky assets for gain while treating others more conservatively.

### **Advisers, framing and mental accounting**

Behavioural finance suggests that advisers could derive an advantage from developing an awareness and understanding of framing and mental accounting. The adviser could focus on the particular mental accounts the client has and the objectives and risk tolerance of each one. It may not be possible to establish a single overall tolerance for risk. Rather, the client may have a different risk tolerance for their pension, ISA and so on. Advisers should counsel clients to evaluate their financial assets with the widest 'frame' possible and avoid focusing on individual securities or instruments.

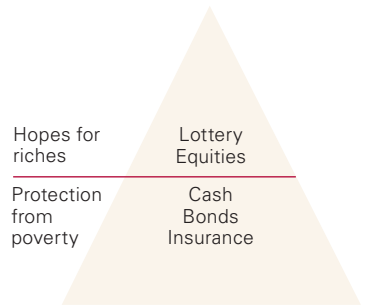
Investors pay less attention to the relationship between the investments held in the different mental accounts than traditional theory suggests. This natural tendency to create mental buckets also causes us to focus on the individual buckets rather than thinking broadly, in terms of our entire wealth position.

## Behavioural portfolio theory

In some early versions of portfolio theory, economists suggested that most investors seek to balance security with the small chance for big winnings. Thus portfolio allocations should be based on a combination of 'insurance' (protection against losses) and 'lotteries' (small odds of a large gain).

Behavioural economists Shefrin and Statman formalised this approach in their behavioural portfolio theory based on mental accounts. They view behavioural portfolios as being formed of a layered pyramid, with each layer a separate mental account.

The base layers represent assets designed to provide 'protection from poverty', which results in conservative investments designed to avoid loss. Higher layers represent 'hopes for riches' and are invested in risky assets in the hope of high returns.



Source: Adapted from Statman (1999) 'Foreign Stocks in Behavioural Portfolios' *Financial Analysts Journal*, March/April 1999, p14.

This idea explains why an individual investor can simultaneously display risk-averse and risk-tolerant behaviour, depending on which mental account they're thinking about. This model can help explain why individuals can buy at the same time both 'insurance' such as gilts and 'lottery tickets' such as a handful of small-cap stocks. The theory also suggests that investors treat each layer in isolation and don't consider the relationship between the layers. Established finance theory holds that the relationship between the different assets in the overall portfolio is one of the key factors in achieving diversification.



# Managing diversification

Advisers understand the critical importance of portfolio diversification. However, behavioural finance research suggests investors sometimes struggle to apply the concept in practice.

## Naïve diversification

Evidence suggests that investors use 'naïve' rules of thumb for portfolio construction in the absence of better information.<sup>9</sup> One such rule has been dubbed the '1/n' approach, where investors allocate equally to the range of available asset classes or funds ('n' stands for the number of options available). This approach ignores the specific risk-return characteristics of the investments and the relationships between them.

Investors might understand the importance of diversification, but not knowing exactly how to achieve it, go for a simple approach. The twist here is that despite the apparent behavioural bias, recent research has shown investors using naïve '1/n' techniques can sometimes do better than the investors who construct portfolios using sophisticated computer models.<sup>10</sup>

9 Bernartzi, Shlomo and Richard H. Thaler. 'Naive Diversification in Defined Contribution Savings Plans.' *American Economic Review* 91(1), (2001): 79-98.

10 DeMiguel, V., L. Garlappi and R. Uppal, 2009, 'Optimal versus Naive Diversification: How Inefficient is the 1/N Portfolio Strategy?' *The Review of Financial Studies* 22.5, 1915-1953.

One of the more common aspects of naïve diversification is the tendency for some households to hold extreme portfolio allocations. On the one hand are aggressive investors who only hold all-equity portfolios. On the other hand are ultra conservative investors who are reluctant to hold anything other than bonds. Many such investors need the help of an adviser to ensure a balance of risk and return in portfolios.

### Investing in the familiar

Investors have been documented to prefer investing in familiar assets. Investors associate familiarity with low risk. This manifests itself in home bias – high portfolio weights in assets from an investor's own country. Institutional and individual investors around the globe tend to bias portfolios towards familiar local markets and away from international markets. In these cases, the danger is one of inadequate diversification. In the UK in recent years, the familiarity of property may have caused many investors to underestimate the risks involved, although recent market falls may have changed this perspective.

#### **Advisers and diversification**

Advisers have an important role to play in helping clients achieve effective diversification and avoiding a concentration of risks in particular investments, no matter how familiar they are. They should caution clients that familiarity is not a substitute for a good spread of investments.

## Using – or misusing – information

Researchers have documented a number of biases in the way in which we filter and use information when making decisions.<sup>11</sup> In some cases, we use basic mental shortcuts to simplify decision-making in complex situations. Sometimes these shortcuts are helpful, in other cases they can mislead.

### Anchoring

Decisions can be ‘anchored’ by the way information is presented. In a non-financial example, participants’ responses to questions with numerical answers, such as ‘How many countries are there in Africa?’ were apparently affected by the value shown on a ‘wheel of fortune’ that was spun in front of them prior to answering. The wheel value provided an anchor that while irrelevant to the question still influenced the answers given.

In the financial sphere, values such as market index levels can act as anchors. Round numbers such as 5,000 points on the FTSE 100 Index, seem to attract disproportionate interest, despite them being numbers like any other.

11 *Shefrin (2000) Chapters 1-3.*

## Availability bias

Some evidence suggests that recently observed or experienced events strongly influence decisions. Psychologists refer to this as the 'availability bias'. Researchers found that individuals were likely to overestimate the chances of being in a car crash if they had seen a car crash on a recent journey. The recent memory made the prospect more vivid – available – and therefore more likely. To give a financial example, investors are more likely to be fearful of a stock market crash when one has occurred in the recent past.

## Representativeness bias

The notion of 'representativeness bias' reflects the case where decisions are made based on a situation's superficial characteristics (what it looks like) rather than a detailed evaluation of the reality. Another way of putting this would be saying that decisions are made based on stereotypes. A common financial example is for investors to assume that shares in a high-profile, well-managed company will automatically be a good investment. This idea sounds reasonable, but ignores the possibility that the share price already reflects the quality of the company and thus future return prospects may be moderate. Another example would be assuming that the past performance of an investment is an indication of its future performance.

Investors also suffer from representativeness bias when they evaluate fund managers. Investors are often drawn to a manager with a short track record of beating market averages over a few years. Meanwhile they show less interest in a manager with a much longer track record that has exceeded averages by only a small margin. Statistically, the manager with the long-term track record has the stronger case to make about skill. But we tend to look at the manager with the short-term track record, and believe that the record of superior performance will continue.

## Conservatism bias

‘Conservatism bias’ describes the idea the decision maker clings to an initial judgement despite new contradictory information. Or they only partially adjust their view in light of the new information. Taking the example above, investors who buy shares in a high-profile company may be slow to adjust their view of the company’s prospects even after the company’s profitability deteriorates.

### **Advisers and checklists**

Various biases act on our decision-making. Advisers can use checklists to identify potential investment pitfalls, such as:

- Am I, or my client, being anchored by an irrelevant factor, or being affected by the way the issue is framed?
- Am I, or my client, responding to an available memory, or judging based on superficial similarity?
- Am I, or my client, being too conservative in updating views based on recent changes in information?

# Group behaviour

The biases discussed so far relate to individual decision making. An important question is how these and other biases affect decisions made by groups. A group situation may counteract a particular bias or it may strengthen it. Equally, the group situation could create new biases.

## Two heads are better than one?

We typically use groups to make decisions in order to benefit from the range of knowledge and experience in a group. However, a desire for social acceptance may encourage individuals with conflicting views to fall into line. Or, those with opposing views may start to doubt their own convictions.

## Crowds vs. groups

Evidence suggests that crowds – groups of unrelated individuals – are often able to identify correct answers to problems. This is typified in the ‘ask the audience’ feature of the *Who Wants To Be a Millionaire* quiz show. The benefit of the audience is that the range of knowledge and experience is diverse and that individuals give their opinion independently of the opinions of others. The research suggests the majority opinion of the audience is correct over 90% of the time.<sup>12</sup>

12. *Behavioral Finance and Investment Committee Decision Making*, CFA Institute Conference Proceedings Quarterly, Arnold S. Wood, December 2006, Vol. 23, No. 4: 29-37, p. 32.

This provides some guidance for effective decision making in committees. Firstly, we need to make sure the committee is appropriately diverse – two heads aren't better than one if both the heads think the same way. Secondly, individuals on the committee must be encouraged to give their own opinions rather than fall into line with the views expressed by one or a few dominant individuals such as their boss.

**Decision-making in groups**

Effective decision-making in groups requires making sure that the group comprises people with diverse experience and perspectives. The group should be run in a manner that allows individuals to express their views freely and not feel pressure to fall into line with other views expressed.

# Managing the biases

The behavioural biases discussed in this guide are thought to be deep-seated aspects of human decision-making processes. Many of them serve us well when making day-to-day choices. But they may be unhelpful in achieving success when thinking about long-term financial decisions such as investing. We are unlikely to find a 'cure' for the biases, but if we are aware of them and their effect, we can possibly avoid the major pitfalls.

## Awareness for adviser and client

Initially, advisers could develop an awareness of the different biases and the influence they have on investing behaviour. Advisers may also wish to understand the biases that will affect their clients and think about how to reduce their adverse influence.

Advisers do a fact-finding exercise with clients, looking at their circumstances and objectives. This exercise involves some form of risk tolerance or risk attitude questionnaire. Behavioural finance would suggest a widening of the review to include other aspects of behaviour. Certainly questions about risk should not simply focus on risk versus return, but also on the client's tendency towards overconfidence in rising markets and undue loss aversion in falling markets. The adviser could also assess the client's decision-making style to understand their proneness to regret, for example.



Some commentators suggest the source of a client's wealth will be an important driver of their decision-making style. A self-made entrepreneur may be risk-tolerant, but require a hands-on approach to managing their investments. Someone with inherited wealth may be more risk averse and passive.<sup>13</sup>

## Audit trails, feedback and framing

A clear understanding of why particular investment decisions have been taken can help mitigate the effects of behavioural biases. Some investors and advisers formalise their investment objectives and requirements in an investment policy statement which acts as another type of commitment device. As markets move and emotions take hold, this record can help prevent making snap judgements. A more rational evaluation can take place about whether individual or market circumstances have changed warranting a change of strategy.

Framing is also a valuable adviser tool. Portfolio discussions should always be framed in terms of long-term goals and the client's total wealth picture. Evaluations of individual investment holdings are useful, but should be considered secondary. In thinking about risk, the approach suggests that clients and advisers should respond to market downturns by reviewing long-term risk and return characteristics of stocks. Such 'wide framing' may help offset the natural tendency to be loss averse.

13 Michael M. Pompian (2009) Diagnosing Behavioral Investor Types, Morningstar Advisor.  
<http://advisor.morningstar.com/articles/article.asp?s=0&docId=16139&pgNo=0>

More generally, investors may be able to use feedback to mitigate behavioural biases. Careful consideration of the outcomes of past decisions should help individuals learn to control and work around unhelpful decision-making biases.

## Checklists

There has been considerable interest in recent years in the use of checklists in decision-making. In some complex circumstances, such as commercial aviation or surgery, checklists are used to aid decision-making under pressure. A checklist takes expert knowledge and distils it into a series of brief statements that guide actions. Use of checklists could help in financial planning in an effort to avoid the behavioural pitfalls. The list can check for common behavioural biases, such as overconfidence, availability and representativeness biases, as well as anchoring and conservatism.

Advisers might consider enhancing their client advice by:

- Evaluating clients' decision-making styles
- Developing formal investment policy statements
- Using behavioural checklists

## The devil's advocate

Individuals tend to decide on a course of action and then look for evidence to confirm that course. This neglects the case against the action. It can be useful to build into a decision-making process the consideration of 'why we should not do this' or 'what could go wrong'. This could be a part of any checklist, or if there are several people involved in the investment process, one could be assigned a formal role as 'devil's advocate' challenged to argue against the proposed course of action.

# What next?

## Mitigating the biases

In this guide we have discussed the field of behavioural finance and its implications for investing and financial planning. There is a range of deep-seated behavioural biases, which, although they might serve us well in various circumstances, tend to detract from investment success. These biases can affect the decisions we take on particular investments and the way we construct portfolios. Individual investors can fall prey to the biases, but as a part of human nature, professional investors and advisers are also vulnerable.

We cannot cure the biases, but we can attempt to mitigate their effects. Using techniques such as feedback, audit trails for decisions, checklists, and 'devil's advocates' can help us take decisions in a more rational manner and improve the chances of investment success.

## The end of behavioural finance?

We expect behavioural finance to continue to grow in importance. Commentators such as Richard Thaler (Thaler, 1999) have suggested that we will reach the 'end of behavioural finance' by which they mean the ideas will become sufficiently established to become part of the mainstream. In essence, at some stage all finance will be behavioural. At that point behavioural ideas will be well embedded in the financial planning process.

## Understanding our brains

One emerging strand of research is the field of neuroeconomics. Medical imaging technology now allows us to look at brain activity as decisions are being made. This helps us to understand the nature and reasons for certain behavioural biases. A recent study demonstrated that individuals with brain lesions that impaired emotional decision-making were more likely to behave as rational investors than individuals with normal brains.<sup>14</sup> Other imaging studies have confirmed that the rational parts of our brain are in tension with the emotional or limbic sections of our brain. This line of enquiry offers the possibility of understanding and improving decision making.

## Better investing

We hope this guide has provided you with a useful insight into the research on behavioural finance. As humans, we are effective decision-makers, but with flaws that can cause problems in realms such as investing. An understanding of the nature of these flaws can help us avoid these problems and invest better.

14 Shiv, Loewenstein, Bechara, Damasio and Damasio, 2005. 'Investment Behavior and the Negative Side of Emotion' *Psychological Science* 16, 435-439.

## Bibliography and further reading

If you want to explore behavioural finance in more detail you might find the following books of interest.

For a more detailed but accessible introduction to behavioural finance try:

Shefrin, Hersh, 2000. *Beyond Greed and Fear: Finance and the Psychology of Investing*.

For a more general discussion of the role of behavioural economics consider:

Thaler, Richard and Sunstein, Cass, 2008. *Nudge: Improving Decisions about Health, Wealth and Happiness*.

For a fascinating review of the recent research from the emerging field of neuroeconomics, read:

Zweig, Jason, 2007. *Your money and your brain*.