

Aspects of Behavioural Finance

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A. Common Biases

1. Over-optimism

Probably the most common bias found among investors (and in many other walks of life). Typically, one is exaggerating one's own abilities, underpinned by an illusion of being in control or an illusion of possessing all knowledge. This bias leads to a tendency to rate oneself above average, maybe average, but seldom below average.

For example:

How good a driver are you?

How good are you at your job?

How good a lover are you?

While some may still be honest or modest enough to accord themselves an average or below-average rating in answering the first two questions, I bet no one will do so with the last question!

2. Confirmatory bias

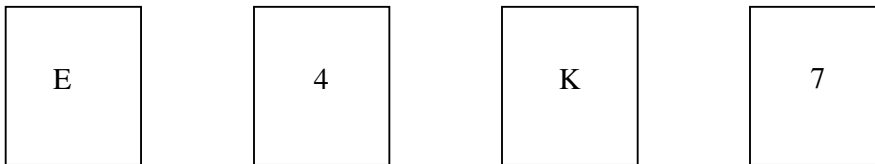
The tendency to look for information that agrees with one's own view and at the same time to ignore that which may be contradictory. Karl Popper, the famous 20th century philosopher, once said: Formulate a view and spend the

rest of the day looking for information that disagrees or proves you wrong. But that is not what we do!

It would probably make more sense to have discussions with people that hold differing views. If you cannot identify the logical flaws in their arguments, you should not be so certain of your own view at all.

For example:

You are playing a card game where letters are printed on one side and numbers on the other. You are given the following statement: The letter E is accompanied by the number 4. You are dealt four cards to prove this statement true or false. Which two cards should be turned around?



Most people would select the first two cards. While the first one is the correct choice, the second card is not since the statement reads: the letter E is accompanied by the number 4 and *not that a 4 should be accompanied by the letter E*. Therefore, the second card cannot prove anything, but quite often people grasp at information that seems to confirm their view, but after careful analysis it proves to be worthless.

3. Representativeness

People are often misled by how things appear rather than how statistically likely they are. This tendency to be led by the narrative of the description rather than by the logic of the analyses is known as the *conjunction fallacy*.

For example:

Give your best estimates of

- The percentage of men living in a suburb who have had one or more heart attacks.
- The percentage of men living in a suburb and over the age of 55 who have had one or more heart attacks.

Most people would opt to allocate a higher percentage to the second proposition, but after careful consideration one realises that the second proposition is a subset of the first; therefore the first proposition should have the higher value.

Other examples include the *hot hand* and *gamblers fallacies* – the tendency to predict the outcome of a random event based on previous outcome patterns, although the outcomes are totally uncorrelated with each other (no memory).

4. Anchoring

The tendency to make use of irrelevant inputs in making predictions about uncertain outcomes.

For example:

You ask an audience to write down the last four digits of their telephone numbers. Then ask them to guess the number of physicians in a big city. Most often one will find the participants' estimates are linked to their telephone numbers – those with telephone numbers ending in high numbers usually have high predictions, while those with low digit numbers will have lower predictions!

5. Framing

Sometimes we are misled quite easily by the way in which information is presented to us. For example, we will react differently to a proposal if we are told that our decision will have a certain negative connotation than when the positive consequences of that proposal are highlighted.

Typically, we tend to favour a guaranteed positive outcome versus options which offer an even better positive outcome, but where losses are still a possibility. When facing negative consequences we tend to favour the riskier option where our potential losses can be severe, but where there is a slight probability of no loss at all, versus a guaranteed loss, albeit relatively small.

6. Loss aversion

The tendency to dislike (avoid) losses far more than we like gains. Studies have shown that people dislike losses about two times more than they enjoy gains.

For example:

You are offered the following bet. On the toss of a fair coin, if you lose you must pay R100, what is the minimum amount that you need to win in order to make this bet attractive to you?

The typical reply from respondents would be somewhere between R180-R200, which confirms people's asymmetrical attitude towards gains and losses.

The consequence hereof is that people take naively huge risks to avoid losses, but may end up facing disastrous consequences.

7. Anticipate the anticipation of others

The actual, private object of the most skilled investment to-day is "to beat the gun", to outwit the crowd, and to pass the bad, or depreciating, half-crown to the other fellow. We have

reached the third degree where we devote our intelligence to anticipating what average opinion expects the average opinion to be.

- John Maynard Keynes

Many investors view the market as some sort of game where the participants try to outsmart one another, knowing that there are going to be losers, rather than to concentrate on the fundamentals of why an investment should be a good long-term prospect.

For example:

Members of an audience are asked to pick any number between 0 and 100. The winner of the game is the one who guesses the number closest to two-thirds of the average number picked by the audience.

This problem can be solved rationally as follows: The maximum $2/3$ value cannot be more than 67, since 100 would have been the highest possible average. The next best estimate would have been $2/3$ of 67, namely 44, thereafter $2/3$ of 44 equals 30, and so forth, until the optimal solution is reached, namely zero (mathematically it can be shown that $x=2/3x$ is not solvable unless $x = \text{zero}$). But this optimal solution would only apply if all participants are rational, and in a game like this it is very unlikely that zero will be the correct answer.

Typically, many people would assume the starting point to be 50, two-thirds of which equals 33. Some would apply further reasoning and guess answers like 22 ($2/3$ of 33) and less. While those that selected the number zero correctly applied rational reasoning, they will not win since the most likely answer in a game like this will be somewhere between 20 and 30.

The lesson learnt from exercises like these is that all participants are not rational; hence it is very difficult to make accurate predictions where the rational outcome and actual outcome will differ.

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B. Understanding Human Behaviour

Why do the biases described above, regularly occur and why are most people prone to them; alternatively, why can some people manage to keep their cool in stressful situations and not fall foul of these biases?

The answer lies in how the human mind works and how we develop its ability to think rationally when solving problems. Basically, the human brain has two different “thinking style” systems, known as the X-system and the C-system. The X-system is the default option. It is an effortless, fast, parallel processing system. The C-system, on the other hand, requires a deliberate effort to use and is slow, but logical.

Psychologists such as Shane Frederick, designed the Cognitive Reflection Task (CRT) tests to measure how easy people find it to interrupt their X-system style automatic responses.

Examples of CRT tests are as follows:

- 1) A bat and a ball together cost R1.10. The bat costs R1.00 more than the ball. How much does the ball cost?
- 2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
- 3) In a lake, there is a patch of lily pads. Every day the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake?

You would agree; the quick and “obvious” responses to the three questions are 10c, 100 minutes and 24 days respectively. But unfortunately, all three are wrong!

Let us consider the first question: Instinctively, one is inclined to answer 10c, but after careful analysis one realizes the difference between the bat and ball is only 90c, not R1. The correct, logical answer is that the bat costs R1.05 and the ball 5c, but this will become transparent only after some deliberate thought about the problem.

The way the second question is presented fools one into giving the wrong answer. Once you read the question slowly (or write it down) you will realize that a machine takes 5 minutes to make one widget, therefore 100 machines will take 5 minutes to make 100 widgets.

The third question is also tricky if one does not bear in mind the second part of the question, namely “every day the patch doubles in size.” If the lake is covered in full by day 48, it is logical that half the lake would be covered by day 47.

A study by Shane Frederick (2005) has shown that the answers given by respondents to the CRT questions are highly correlated with several behavioural traits. Specifically, he finds that those with high CRT scores are more patient than the low score respondents. Patience, incidentally is an important trademark of successful investors.

For example, he gave his study group the following choice: you can either have \$3,400 this month or \$3,800 next month; which do you choose? Of those who scored zero on the CRT, 65% went for the near term lower payout. In contrast, 60% of those with the highest CRT score went for the later, higher payout. If one analyses the problem correctly, one will ascertain that the immediate payout represents a discount of more than 140% of the later payment, which in any financial system is always inferior to the deterred payment.

Frederick also found that the CRT was positively correlated with people's attitudes to risk. For example, in the following exercise people were presented with various gambles:

\$100 for sure or a 75% chance of \$250

Lose \$100 for sure or a 75% chance to lose \$250

\$100 for sure or a 3% chance of \$7000

Lose \$100 for sure or a 3% chance to lose \$7000

When the gamble was framed in terms of gains, those with a high CRT score were far more likely to select the riskier option. However, when framed in terms of losses, the high CRT group was markedly less loss averse and selected to take the certain loss rather than gamble.

In another study James Montier (2006) compiled a survey among 300 investment managers around the world. The results of his study clearly showed that those with the higher CRT scores – ability to analyse a problem comprehensively before presenting a solution – showed a lesser tendency to biases such as anchoring, framing, loss aversion and the anticipation game.

However, the majority of managers (74%) in Montier's survey did rate themselves above average, which is a definite indication of the over-optimism bias. Also, the majority of the respondents were subject to the confirmatory and representativeness biases. Thus, Montier's study shows that even the professional investors are subject to ordinary human errors in logical reasoning.

The practical conclusion from the evidence presented is that one is very likely to be emotionally predisposed once one has entered the rollercoaster world of investments. Logical reasoning may very well take a back seat. Therefore, it is advisable to take one's cue from experienced investors and advisors to guide one through tough times, which invariably are part and parcel of long-term investing.

Furthermore, purely relying on professional investment managers to avoid costly mistakes on the investment market might also prove to be overly optimistic, to say the least. Hence, it will always be prudent to include a passive investment strategy in one's investment arsenal. Active investing and decision making invariably expose one to biases, which lead to suboptimal and very often sub-par performances in the long run.

Sources:

Frederick, Shane, 2005. Cognitive reflection and decision making, *Journal of Economic Perspectives*, 19(4).

Montier, James, 2006. Behaving Badly, a *Global Equity Strategy* publication by Dresdner Kleinwort Wasserstein, February 2.