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INVESTOR BEHAVIOURAL PSYCHOLOGY

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Dynamic stock selection is all about embracing and harnessing change. The overwhelming advice of successful investors from Keynes to Soros is to run the winners and cut the losers. Yet most investors still fail to do this. In an attempt to discover why, this article reviews several aspects of institutional investors' behaviour. I then develop a more robust solution by expanding behavioural finance theory to look at investor behaviour from the perspective of neo-Freudian notions of our personality.

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Why investors sell the winners and run the losers

In traditional investment theory, the Efficient Market Hypothesis (EMH) says that rational investors make share prices efficient by fully reflecting all information in prices. As all available information about a stock is fully reflected in its price, only new information will make the shares move. As this is unpredictable, it is random. The Random Walk theory was established in the US in the 1930s, largely on the basis that share price changes looked random. Time series analysis of share price changes run on 1950s and 1960s computers 'confirmed' this.

In 1952, Harry Markowitz published *Portfolio Selection*. On the EMH view that share prices were 'efficient', he assumed that there was no point in trying to maximise returns. Instead, he aimed to maximise the return/risk trade-off by minimising risk. He used variance of returns as the risk measure.

Historically, every share had moved partly with the overall market, and this element of its variance could be recorded as its 'beta' (a share with a high beta has a high correlation with the market). Aside from this, the independent variance of individual shares could be minimised by combining lots of them in a portfolio. This idea spawned the Capital Asset Pricing Model (CAPM), Modern Portfolio Theory (MPT), Arbitrage Pricing Theory (APT), Diversification, Optimisation, Indexation and so on. All of this was based on the assumption that share prices were 'efficient'.

In the UK, a significant part of the market is held by 'tracker' or 'index' funds. Many UK investors are still followers of the EMH as passive investors in index funds. They believe that all shares prices are efficient, so there is no point trying to run the winners and cut the losers. Instead they minimise the risk by copying (tracking) the index. These investors accept the assumptions of the EMH. Unfortunately for them, all three of its assumptions about risk, beta and efficiency are wrong.

Firstly, risk is not the same as variance. People do not worry about the risk of unusually high returns. People are concerned with the risk of losses (Olsen, 1997). Modern Prospect Theory demonstrates that the link between variance and risk of loss is not clear, and sometimes perverse.

Stock returns have 'fat tails'

Secondly, beta is not stable or predictive - it just records how the shares have moved. So it is not predictive, and the same stock has different betas in the same historical past, depending on whether you measure daily, weekly, monthly or quarterly. Twenty years on from inventing the term "Efficient Market Hypothesis", Fama along with French reported finding no relationship between beta and stock returns for all New York Stock Exchange stocks over the period 1963-90 (*Inquire*, 1992).

Thirdly, and most importantly, price changes are not random. As computing power increased in the 1990s, academia discovered that stock returns were not 'normal' but had heteroscedasticity, or 'fat tails'. In other words, there were more large moves than expected. Importantly, modern academic studies have also shown the existence of share price momentum in world stockmarkets (Jagadeesh et al, 1993).

Finally, we can also challenge the EMH with common sense. Simple economics says that the more expensive a share is, the worse value it offers and so (other factors unchanged) the more likely it is to underperform. Yet the higher the market value, the more the index fund manager invests! If two

Shares do not reflect information, but people's expectations.

otherwise identical stocks are differentiated only by the fact that one has twice the market value, and is thus twice as expensive as the other, the index fund manager will defy simple economics and buy twice as much of the expensive stock!

The verdict on EMH and index funds is well expressed by Warren Buffet, who has become a self-made multi-billionaire as: "The disservice done to students and gullible investment professionals who have swallowed EMH has been an extraordinary service to us…In any sort of contest, financial, mental or physical, it is an enormous advantage to have opponents who have been taught that it is useless even to try." (BERKSHIRE HATHAWAY REPORT 1988).

Lessons from John Maynard Keynes

We can find further insight from another highly successful investor - John Maynard Keynes. Keynes' classic text *The General Theory of Employment, Interest and Money* (1936) effectively created the academic field of macroeconomics. In practical terms, it caused a sea change in world economies and financial markets. Yet Keynes' book has a much less revered and understood section: *The inducement to invest - the state of long-term expectations* (book IV, chapter 12). This explores the way the stockmarket actually values shares.

The key insight is that share prices do not reflect information, but people's expectations. Keynes explained that anticipating changes in consensus expectations was the key to successful stock selection. He says that by convention the stockmarket underestimates the extent of change by overemphasising the current situation. Therefore if we recognise change and extrapolate it ahead of the stockmarket, we will outperform. So in 1936, Keynes outlined a dynamic approach to investment management that involved embracing and harnessing change.

It is worth emphasising that Keynes' stockmarket record was at times outstanding. His "brilliance as a practicing investor matched his brilliance in thought", according to no less an authority than Warren Buffett (Berkshire Hathaway report, 1991). From 1929 to 1945, Keynes had a comfortable annual salary of £1,000-2,000. His personal securities portfolio rose over this period from £18,165 to £436,194.

The paradox is that although he got only a second class pass into the Civil Service because of his low mark in the economics paper, Keynes' economic theories became the universally-taught established dogma of academia. Yet having made himself the equivalent of £10 million through successful stockmarket investment, his stockmarket theories (in the same text) remain at odds with established academic dogma, and concealed in obscurity.

Fund managers are not aiming to maximise performance.

Rational fund managers but irrational investors

Something Keynes would not have experienced is the dominance of institutional investors in modern times. The point here is that institutional fund managers operate as rational agents, not rational investors. Typically they are not aiming to maximise performance. They are motivated (by bonus payments) according to relative annual performance.

Relative performance measurement means that only stocks held in proportions different to the peer group matter to the fund manager. From his perspective, he has no risk in holding any stock, as long as it is in the same proportion of his fund as in the mean of his competitors' funds. Risk is defined (rather perversely) as deviation from the competition. So, depending on how low his risk is, he will own stocks he considers unattractive just because his competitors have a lot of them. The lower his risk, the more unattractive stocks he buys to match the other fund managers' choices. Whenever his competitors buy or sell stocks in their portfolios, since he judges his portfolio relative to their mean, the institutional investor will buy or sell the same stocks. So he blindly adopts their stock selection process, however faulty. Their faulty process is, in turn, driven by annual performance targets.

Annual performance measurement means the fund manager will try to lock in gains and gamble away losses. If the fund manager's maximum and minimum performance bonus payment targets are at, say, plus and minus 3%, then gains above 3% in any year are worthless, and losses greater than -3% carry no penalty to him. The implication is clear. Once the +3% is made, all risk should be eliminated for the rest of the year. On this basis, the institutional fund manager will therefore rationally cut his winners. On the other hand, if a 3% loss is made, the risk of further losses this year means nothing, but any gain is worthwhile. The incentive is to play double or quits.

This explains why institutional fund managers lose money and why prices are volatile (and look inefficient). There is a problem with stopping here, however. We still need a theory to explain why customers/directors of institutional fund managers set relative annual targets based on conformity with the peer norm and yes/no performance thresholds. We have not addressed the irrationality - we have just pushed it back a level.

The question is: why do investors not follow the simple, powerful, widely published advice to run the winners and cut the losers? Freud's notions of personality and behaviour can help us understand this.

A Neo-Freudian approach

The Neo-Freudian approach builds on Freud's basic idea of the personality having three aspects. These he called the Id, Ego and Superego. Let's examine how each of these behaves in the stockmarket.

The Ego

The Ego is the rational part of our personality that concerns itself with logic and probability estimation. It calculates the correct choice on the basis of the probability of success and the payoff for being successful. However, this abstract mental arithmetic is comparatively very new to the way humans think, emerging in only the last 1% of our mind's evolution. It is bolted on to a mind that had, for a far greater time, been driven by instincts to survive and socialise. It should not be surprising that this function turns out to be imperfect.

Rational calculation based on payoffs and probabilities and is subject to error because we are not good at estimating payoffs or probabilities. This is a fairly serious flaw! At root is the sort of logic we use. Our minds operate with classical Greek logic. (This is crisp set theory, not fuzzy logic. Something not in a particular set must be in that set's complement). The essence of this is Aristotle's Law of the Excluded Middle, which says, basically: either it is, or it isn't. Let's examine the question: is this a good payoff?

People weight prospective losses twice as heavily as prospective gains.

Logic: "Is it a good payoff?"

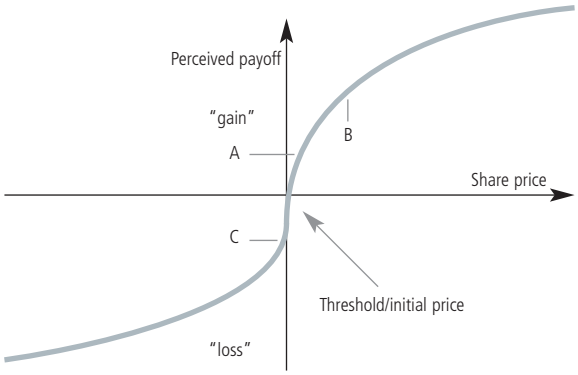
This is a bit like the question: is £19.99 as much as £20? Either it is or it isn't, and we reason that it isn't. The number in question fails to meet the target. The 1p between £19.99 and £20 assumes a key value to us because it means either we achieve a given prospect or we don't. It just takes a walk down the high street to see this flaw in the way we understand numbers demonstrated by every price tag that ends with ".99"!

Daniel Kahneman and Amos Tversky noted this in a 1979 paper, *Prospect Theory*, which has subsequently become developed into the new field of Behavioural Finance. The point is that thresholds matter, because below this the target is not met. The loss of 1p against the £20 target matters much more than a gain of 1p against it. "The major driving force is loss aversion", according to Tversky, who also noted that "our preferences can be manipulated by changes in the reference points": 'Framing' of decisions matters, (1990). Prospect Theory found that when making decisions in uncertain situations, people weight prospective losses about twice as heavily in their calculations than prospective gains (Econometrica, 1979). This led to the Prospect Theory payoff chart:

Prospect Theory payoff chart

On the chart, I have highlighted three situations: 'A', 'B' and 'C'. Assuming there is the same 50:50 probability of a share price rise or fall of the same amount at these points, we get three different expected 'payoffs', and Prospect Theory leads us to three different decisions.

'A' shows a small rise from the threshold/initial price. The payoff gain from a small rise here is the same as the loss from a small fall. A penny rise from here is worth the same as a penny fall. Each is equally likely, so expected net payoff is neutral and therefore the logical decision is hold.



'B' shows a large rise from the initial price. The payoff gain from a small rise here is less than the loss from a small fall. A penny rise from here is worth less than a penny fall. Each is equally likely, so the expected net payoff is negative and therefore the 'logical' decision is to sell.

'C' shows a small fall from the initial price. The payoff gain from a small rise here is more than the loss from a small fall, because we recover the key amount that gets us back to the threshold. A penny rise from here is worth more than a penny fall. Each is equally likely, so expected net payoff is positive and therefore the 'logical' decision is to buy.

Logic therefore tells us that the way to maximise our expected net gain-loss payoff is to sell the winners and run the losers. Indeed, it actually directs the investor to buy more of the losers.

We tend to notice later information that confirms our belief and not notice that which contradicts it.

Logic: Is there a good probability?

In theory, we estimate probability by applying an algorithm to all our information to crunch through the statistics and eventually provide an exact solution. In practice, our mental time and energy is limited. So we apply a simpler rule of thumb, or heuristic, to get a rough answer. Most of the time this is fine - our brain uses shortcuts to work more efficiently. However, when statistics and heuristics clash we tend to ignore the correct answer and stick with the rule of thumb. Kahneman and Tversky gave two heuristic examples.

The Availability Heuristic states that an easily recalled and vivid event seems more probable. We attach higher probability to that which we can envisage most clearly. Often the recent past is more vivid than the future, so our probability judgements are biased by 'anchoring' on the current situation. An aspect of this is demonstrated by the 'gambler's fallacy'. This commonly held misconception says, for example, that when we have tossed a coin four times and have got four heads in a row, we are then due to toss a tail - by the law of averages. We can recall more easily seeing four heads and a tail come up in five tosses than we can recall seeing five heads in a row. Hence a tail now seems more likely. However, of course, the chance of another head is still 50:50.

The Representativeness Heuristic works simply on the basis of weighing up how much this example looks like previous ones. This is demonstrated by 'the conjunction fallacy'. Suppose we know Linda enjoys playing saxophone, which of the following is more likely: (A) Linda is an insurance clerk or (B) Linda is an insurance clerk who plays jazz in the evenings. Most people say (B) because it "sounds more like Linda". (87% in Kahneman and Tversky's 1982 version). However (B) is a subset of (A). It must be more probable/likely that she is an insurance clerk with any kind of hobby (including jazz), than an insurance clerk only into jazz.

Both these heuristics are further strengthened by overconfidence. Experiments show that typically people are more confident than correct in their judgement. When their answers were only 60% correct, people were 75% confident. When they were 100% confident, they were still just 85% correct (Fischhoff, 1977). It seems we overestimate the correctness of our (heuristic) decisions when we make them.

Having made a decision, belief perseverance and confirmation bias says that "once you have a belief, it influences how you perceive all other relevant information" (Jervis/Myers). We tend to notice later information that confirms our belief, and not notice that which contradicts it. Arguably, information can be interpreted only within the framework of our existing theories/beliefs or paradigm, so information that does not fit this does not make sense to us - and therefore is ignored. Experiments showed that when people with opposite beliefs were both given the same new unbiased information, this increased their level of disagreement (Lord, 1979).

The 'sunk cost fallacy' also relates to this self-reinforcing link between behaviour and attitude. In a study, subjects were asked whether they would invest further in an investment project which at the outset had obviously positive projections, but had since produced disappointing results. When given all the information, only 35% decided to invest further. But, when subjects were first given the obviously positive projections (and therefore had agreed to start the project), 60% then decided to invest further when they were also given the currently disappointing results - even though at that stage both sets of subjects had exactly the same information with which to make exactly the same decision. (Samuelson & Zeckhauser, 1988).

All the behavioural biases make people think there is a better than 50:50 chance of a rise against a fall.

How investors "cut the winner"

So, what do these flaws in our probability estimation mean for our stockmarket behaviour? Taking the Prospect Theory chart, we said that there was a true 50:50 probability of a share price rise or fall of the same amount at 'A', 'B' and 'C'. How are we likely to estimate/perceive this probability?

At 'A', it is likely that we will still think of it as 50:50. The shares are ahead a bit, but that is what we envisaged when we decided to buy, so the availability heuristic is neutral. We were overconfident when we made the decision to buy, and subsequent information has served to reinforce our belief and confirm the decision. The very act of our purchase seems to us to justify the share standing a little ahead of that price. It *looks like* there is a 50:50 chance of an equal rise or fall from here. The decision to hold is thus reinforced.

At 'B', we are a long way up. It is possible that we have never seen the shares this high before. The availability heuristic sees most of our experiences and expectations of these shares at lower prices than now. These numerous and clearly recalled experiences of lower prices seem more probable than the rarely experienced event of a higher price. We bought the stock because it looked attractive, but chances are it

doesn't *look like* a stellar performer to the representative heuristic. It probably *looks like* it's overbought. Overall, the heuristics combine to make us think that there is a worse than 50:50 chance of a rise against a fall. Even though we (wrongly) undervalue the payoff from a further rise, we also underestimate the probability of a further rise. Therefore, the decision to sell is reinforced. We cut the winner.

At 'C', we are below the threshold. This is not what we expected. The availability heuristic sees all of our expectations and most of our experiences of these shares at higher prices, and few at lower prices. The chances are that the representative heuristic still says this stock doesn't *look like* an underperformer. The overconfidence, belief perseverance and confirmation bias support this decision. Because we bought it, the endowment effect and behavioural momentum strengthen our conviction further. All of the behavioural biases make us think that there is a better than 50:50 chance of a rise against a fall. Even though we (wrongly) overvalue the payoff from a rise, we also overestimate the probability of a rise. Therefore the decision to buy is reinforced. We run the loser.

So 'rationally', the ego finds it logical to cut the winners and run the losers. But this is just part of the explanation. Frequently, the driving force for our behaviour will be the Id or Superego. In these circumstances, investors don't even try to be logical.

The demands of the Id

The Id is the 0-3-year-old child within us, driven solely by the 'pleasure principle'. It has pre-logical thinking and no vocabulary. The demands of the Id are for immediate gratification. It has no conception of anything other than the present. It is the most primitive part of our personality and the longest evolved. Even before humans could interact (or be human), they needed the instinct to satisfy basic needs to survive and reproduce.

The behaviour of the Id in the stockmarket, therefore, is totally straightforward. When we crystallise a profit on a share, we get a lump of money. This makes us feel good now. The future is irrelevant. We want to take a profit. The message is: sell the winners. On the other hand, when we crystallise a loss on a share, we take a loss. This makes us feel bad now. Again, this is regardless of the future. The message is: do not take a loss - run the losers.

The 'pleasure principle' has another angle insofar as for most of us there is some pleasure in being right, and pain in being wrong. Crystallising a gain gives both the pleasure of having the extra cash and the pleasure of demonstrating success. Crystallising a loss, on the other hand, also involves the pain of demonstrating failure. For people with a strong ambition to match their "idealized self-image" (Horney, 1950), the want/need to avoid the pain of failure can become the major driving factor. Often those people who choose to compete in investment markets have above-average ambition, and are more likely than average to refuse to accept failure. Arguably, "they would rather lose money than admit they're wrong" (*Shwartz, Market Wizards*).

The Superego and the stockmarket

The Superego is the internalised voice of the parent, learnt uncritically. It learns not by reason but by repetition. The force of the instruction depends on the number of times it has been given. The evolutionary benefit of accepting the view of the parent instinctively is obvious. Knowledge important to survival could be passed on directly, rather than having to be rediscovered. Not critically questioning the information makes the process quicker and easier. Humans that developed a Superego therefore out-survived and out-evolved those without one.

They would rather lose money than admit they're wrong.

The evolutionary angle also highlights the social element. The group we are in has the same role for us as the parent. Just as it is beneficial for us to accept the view of the group, it is also dangerous for us to contradict it. Machiavelli, the famously objective observer of society, warned that groups are hostile to new ideas (even from princes): "The innovator makes enemies of all those who prospered under the old order and only lukewarm support is forthcoming from those who would prosper under the new…whenever those who oppose the changes can do, they attack vigorously, and the defence made by the others is lukewarm. So both the innovator and his friends come to grief" (*The Prince*, 1514, chapter VI).

In other words, we have an instinct to conform to what we are told by the rest of our group. Several famous experiments confirm this. Solomon Asch (1955) asked thousands of students to say which of three lines was the same length as another example alongside them. Answering alone, students got less than 1% of the questions wrong. When they followed a number of stooges, giving unanimously the wrong answer, the students conformed with them and gave the wrong answer to 32% of the questions. 74% of the students conformed and gave the wrong answer to a question at least once.

So what about the Superego in the stockmarket? What ought we do? Well, stockmarket decisions are complex, and the status and power of the group is much greater than any individual. And before we make our decision there has been a unanimous view that the current price is right - insofar as it reflects

the consensus view of all buyers and sellers in the group. This situation is one in which the Superego is likely to dominate the Ego. Freud said that these circumstances led to decision-making by imitation rather than by rational thought - we might liken it to 'herd instinct'. So if the Superego is told through the consensus view of stockbrokers, colleagues, analysts' notes, newspapers, etc that the price of a share *should be*, say, £1, how do we now respond to a price change?

The Superego internalises the group's judgement that "these shares should be £1". It has no critical ability to challenge this. The message from the Superego to the bid for shares at a price above £1 is therefore that "these shares should be £1", which translates to "sell". The response to a rise in the share price is that we should sell. The message from the Superego to the offer of shares at a price below £1 is again "these shares should be £1" - which now translates to "buy". The response to a fall in the share price is that we should buy. Therefore the Superego tells us that we should sell the winners and buy the losers.

The problem is human nature

We know dynamic stock selection works. It seems that most investors fail to fully recognise change. Investors who recognise and harness change outperform. Post-Keynes' 1936 *General Theory*, investors have had these principles set out in the century's most influential economics book, by an outstanding academic and stock-picking genius. Yet most of them still make the same mistakes. As a legacy of EMH, some of them misunderstand these principles. Some are biased by institutional incentives. But for most, the problem is human nature.

When we try to be rational, we fail. But often we don't really try at all. Neo-Freudian psychology explains. People reject dynamic stock selection, and cut the winners and run the losers because the Ego tells them it is 'logical', the Id makes them want to, and the Superego makes them feel they ought to. It is hard to see how we could stop them losing money to those of us who do run the winners and cut the losers - even if we wanted to.

When investors try to be rational, they fail.

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