Philosophy

Behavioural Finance Theory

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Behavioural Finance Theory

- Learning Objectives
  - Describe the concept of behavioural finance and how it supplements traditional financial and investment theory.
  - Describe "prospect theory" and explain its importance as a pillar in behavioural finance.
  - Describe and differentiate among the cognitive and emotional biases.
  - Identify the behaviours followed in practice and prescribe ways to better manage each as related to existing beliefs, and emotions.
  - Identify the following investor types and their characteristics: preservers, followers, independents, accumulators.
  - Describe how findings in the field of behavioural finance may help investment advisors and consultants better manage the thoughts, feelings, and actions of themselves and their clients.

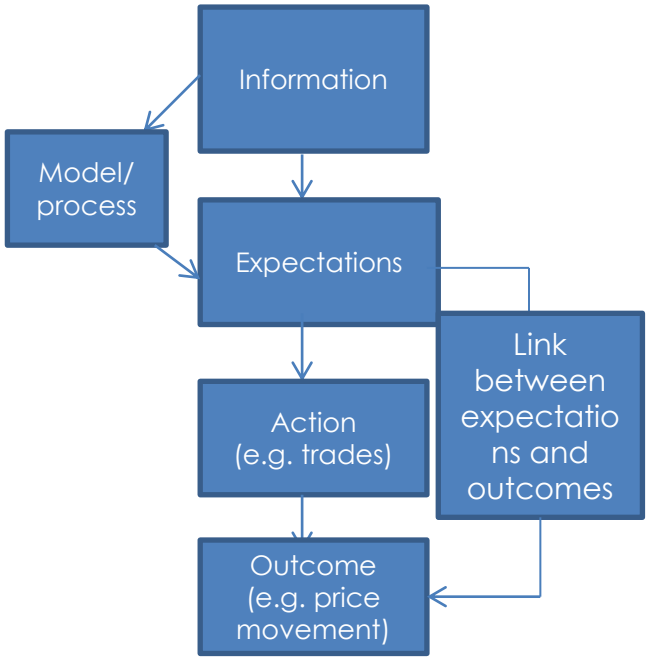
Rational wealth-maximising investors

- The second condition for market efficiency is competition upon **rational** investors all utilising the available information to identify mispriced stocks with the view of pursuing an investment strategy with the objective of maximising their wealth.
- The key word in this sentence is **rational** as it underlies all economic models and describes how economists assume that individuals (and institutions) behave.
- Behavioural finance departs from traditional finance in that it assumes that individuals do not behave in the rational way assumed by economists.

Traditional economics: rational expectations

- The behaviour of individuals and particularly their expectations play a very important role in determining economic outcomes.
- Prior to the writings of Muth (1961), the normal assumptions was that individual followed adaptive expectations meaning that they arrived at their expectations of the future based on what had happened in the past.
- Economists then switched to assuming that individuals follow rational expectations with a major difference being that now expectations are assumed to adjust when new information is received (Bayesian).

More on rational expectations

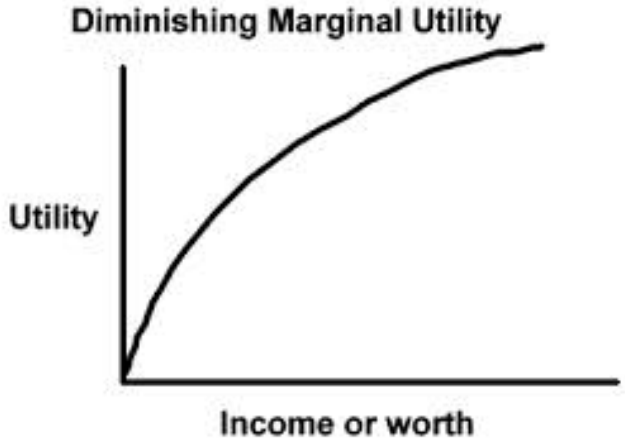


- Rational Expectations
  - Rational expectations where the expectations generated by the model using available information are unbiased (i.e. expectations are on average consistent with outcomes)
  - $P = E\{P\} + \xi$ N.B. $\xi\ (0, \sigma_{\xi})$
- Note that the EMH is analogous with rational expectations as it is based on the premise that expectations (prices) are on average right

More on rational expectations

- As we have seen, individuals use some model/process to convert information into expectations.
- These (rational) expectations then provide the basis for how investors make decisions in an uncertain world with their objective being the maximisation of expected utility.
- Savage developed a set of axioms that characterised the decision process of a rational investor:
  - If a > b and b > c, then a > c
  - If a > b, then a+x > b+x
  - If a > b. then xa > xb
- As we will see, a number of studies highlight instances where people would seem to make decisions that breach these axioms and it was studies such as these that laid the foundation for behavioural economics/finance.

Expected Utility Theory



- More wealth is better than less wealth.
- The value (utility) placed on wealth is not linear.
- There is (assumed) diminishing utility associated with wealth (Concave function).
- Concavity is also consistent with risk aversion.

Expected Utility Theory: Is it realistic?

- Why do people both take out insurance and gamble on unfair games?
  - People's behaviour differs with respect to gains and losses.
- Framing: A person's decision can be dependent on how the problem is framed.
- Both these points are covered in the next example…

Framing

- A disease is expected to kill 600 people – choose between:
  - Solution A: will save 200 people
  - Solution B: one-in-three chance that all 600 will be saved; two-in-three chance that all 600 will not be saved

- Same disease, 600 will die – now choose between:
  - Solution C: 400 will die
  - Solution D: one-in-three chance that nobody will die and a two-in-three chance that all 600 will die

Framing

- A disease is expected to kill 600 people – choose between:
  - Solution A: will save 200 people
  - Solution B: one-in-three chance that all 600 will be saved; two-in-three chance that all 600 will not be saved

  Positive Framing: Choose A (72%) NO RISK
- Same disease, 600 will die – now choose between:
  - Solution C: 400 will die
  - Solution D: one-in-three chance that nobody will die and a two-in-three chance that all 600 will die

  Negative Framing: Choose D (78%) RISK

- Explanation? **Individuals tend to be risk averse when dealing with gains (gambling – positive frame) but risk takers when dealing with loses (insurance – negative frame)**

Allais Paradox

- Chose between the following lotteries where the payoff depends on a number drawn (one to a100):
  - A: 1 to 33 payoff $2500; 34 to 99 payoff $2400; 100 payoff $0
  - B: 1 to 100 payoff $2400

- The same type of lottery but now with different payoffs:
  - C: 1 to 33 payoff $2500; 34 to 100 payoff $0
  - D: 1 to 33 payoff is $2400; 34 – 99 payoff $0; 100 payoff $2400

Allais Paradox

- Chose between the following lotteries where the payoff depends on a number drawn (one to a100):
  - A: 1 to 33 payoff $2500; 34 to 99 payoff $2400; 100 payoff $0
  - B: 1 to 100 payoff $2400

  82% choose B
- The same type of lottery but now with different payoffs:
  - C: 1 to 33 payoff $2500; 34 to 100 payoff $0
  - D: 1 to 33 payoff is $2400; 34 – 99 payoff $0; 100 payoff $2400

  83% choose C
- C = A - $2,400 (66) and D = B - $2,400 (66)
- Hence is you choose B, you have to choose D

- Explanation? **People choose differently when switching between a certain event (option B) and an uncertain event (C or D)**

Risk versus uncertainty

- Risk is where the probabilities are known.
- Uncertainty is where they are not known.
- Ellsberg Paradox:
  - A bin contains 90 balls, 30 red and the others black or yellow
  - You are offered the following choice as a lottery prize:
    - A: you get $100 if you draw a red ball
    - B: you get $100 if you draw a black ball

  - Now consider another lottery with different prizes:
    - C: you get $100 if you draw either a red or yellow ball
    - D: you get $100 if you draw either a black or yellow ball
- What does this tell us about how people react to uncertainty?

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  - You are offered the following choice as a lottery prize:
    - A: you get $100 if you draw a red ball
    - B: you get $100 if you draw a black ball

    Most people choose A
  - Now consider another lottery with different prizes:
    - C: you get $100 if you draw either a red or yellow ball
    - D: you get $100 if you draw either a black or yellow ball

    Most people choose D
- What does this tell us about how people react to uncertainty? **They are (considered to be) averse to uncertainty**

Enter Behavioural Economics

- Traditional economics is based upon the presumption that individuals aim to maximise their utility which is dependent on the level of, and risks attached to, wealth.
- This is reflected in the objective functions embedded in their models.
- Enter behavioural economics where non-wealth related factors enter into individuals' objective functions.
  - Does this mean individuals are irrational or that the economists' definition of rationality is too narrow?

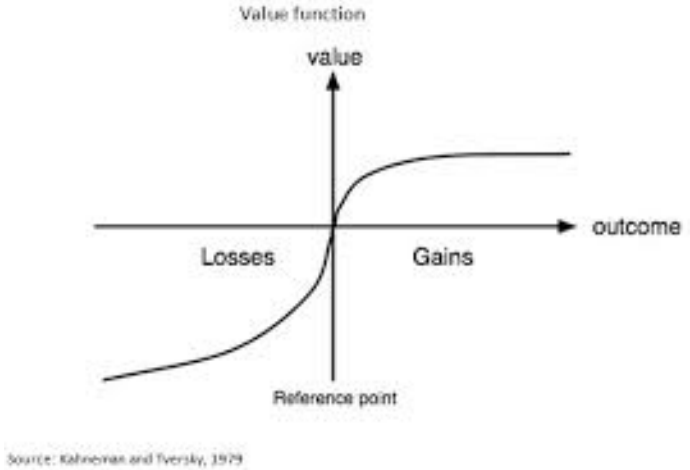
Behavioural Finance

- Market participants do not conform to two important assumptions of Modern Portfolio Theory:
  - expected utility theory (wealth maximisers)
  - rational expectations
- Two (not necessarily independent) explanations for these departures:
  - Principal/agent theory (an economic behavioural explanation)
  - Cognitive biases (a behavioural explanation)

Principal/Agent Theory

- Everyday of the week we enter into numerous principal/agent relationships because the principal does not have the time and/or the expertise to perform the task themselves and so employs an agent.
- In such relationships, there is a potential conflict of interest between the two parties. Faced with such conflicts, the agent will frequently act in a way that is to their own advantage, at the disadvantage to the principal.
- Faced with this possibility, principals will attempt to minimise this wealth transfer:
  - **Monitoring**: observing the behaviour of the agent
  - **Bonding**: contracting is a way aimed at minimising the conflicts of interest
- The best outcome being to minimise the aggregate of the wealth transfers, monitoring costs and bonding costs.
- There are reasons to think principal/agent issues are greatest in the financial services industry (non-satiety), especially in Australia (disinterested principals).
- e.g. "it is a good company, it is a good investment"

Behavioural Finance: Prospect Theory



Source: Kahneman and Tversky, 1979

- Utility is dependent on change in wealth.
- Concave (risk averse) for gains and convex (risk takers) for losses
- Steeper for losses than for gains
  - Losses are weighted larger than gains

Summary

- Economic and finance theory has embedded in it presumptions about how individuals behave.
  - Adaptive and then rational expectations
- The behavioural scientists would have us believe that individuals depart from this type of behaviour in systematic ways.
- The empirical literature is strewn with results that have been typed as anomalies. Behavioural finance is seen by many to marry theory with these anomalous pricing findings.

Cognitive biases

- These are persistent economic irrationalities in our decision process.
- Mental versus Emotional
  - Mental biases are basic statistical, information processing, or memory errors that cause the decision to deviate from rationality
  - Emotional biases are those that arise spontaneously as a result of attitudes and feelings and that cause the decision to deviate from the rational decisions of traditional finance.

Different types of behaviour

- Relating to existing beliefs
  - **cognitive dissonance**
  - **conservatism**
  - confirmation
  - **representativeness**
  - illusion of control
  - hindsight bias
- Related to information processing:
  - **mental accounting**
  - **anchoring and adjustment**
  - **framing**
  - availability bias
  - self-attribution
  - outcome bias
  - recency bias

Different types of behaviour

- Related to emotions
  - loss aversion
  - **overconfidence**
  - self-control bias
  - **status quo**
  - endowment
  - **regret aversion**
  - Affinity
- With respect to each of these the text provides:
  - General description
  - Technical description
  - Investment implications

Relating to existing beliefs: Cognitive dissonance

- When newly acquired information conflicts with pre-existing understandings, people often experience mental discomfort - a psychological phenomenon known as cognitive dissonance.
- How to deal with information that is at variance with a recent decision:
  - **Selective perception** (ignore contrary information
  - **Selective decision making** (sticks with original decision)
- Some investment implications:
  - Stick with underperforming stock
  - Buy more of underperforming stock
  - A belief that it is different this time

Relating to existing beliefs: Conservatism

- A mental process in which people cling to their prior views or forecasts at the expense of acknowledging new information.
- Individuals underweight new information and cling to old views/forecasts.
- Some investment implications:
  - A slow reaction to new information
    - We have seen evidence of underreaction
    - Analyst typically revise several times in reaction to new information
  - A lack of flexibility in changing one's mind

Relating to existing beliefs: Representativeness

- The habit of classifying new phenomenon/experiences under existing labels to facilitate easier analysis of the new phenomenon.
- People are bombarded with a large amount of sometimes complex information and so develop a number of techniques to make decision-making more manageable.
- Representativeness is typically described as coming in two forms:
  - **Base-rate neglect** (putting something into quite a narrow box such as "it is a good company, it must be a good investment")
  - **Sample size neglect** (acting as if information had been drawn from a large sample)
- Some investment implications:
  - Underestimating the probability of default of an investment grade bond
  - Choosing a manager on the basis of a short-period of outperformance

Loss aversion, framing and mental accounting

1. You have just won $30. Now choose between: **A** where you have a 50% chance or winning $9 and a 50% chance or losing $9; and, **B** where you have no further bets.

   Now choose between: **A** where you have 50% chance of winning $39 and a 50% chance of winning $21; and, **B** where you have a sure gain of $30.

2. Are you currently happy with life?

   How often have you dated in the last month? Are you currently happy with life?

3. A car is in short supply. Is it OK for the dealer to increase the price to $200 above the recommended price?

   Is it OK for a dealer to discontinue a $200 discount previously offered?

NB: People are more averse to losses than they are appreciative of gains in the ratio of approximately two to one.

Loss aversion, framing and mental accounting

1. You have just won $30. Now choose between: **A** where you have a 50% chance or winning $9 and a 50% chance or losing $9; and, **B** where you have no further bets. **(A 70%)**

   Now choose between: **A** where you have 50% chance of winning $39 and a 50% chance of winning $21; and, **B** where you have a sure gain of $30. **(B 57%)**

2. Are you currently happy with life? **(Yes 62%)**

   How often have you dated in the last month? Are you currently happy with life? **(Yes 89%)**

3. A car is in short supply. Is it OK for the dealer to increase the price to $200 above the recommended price? **(Yes 29%)**

   Is it OK for a dealer to discontinue a $200 discount previously offered? **(Yes 58%)**

NB: People are more averse to losses than they are appreciative of gains in the ratio of approximately two to one.

Relating to information processing: Mental accounting

- Describes people's tendency to code, categorise, and evaluate economic outcomes by grouping their assets into any number of nonfungible (noninterchangeable) categories.
- Numerous interpretations of mental accounting including:
  1. Shefrin and Thaler's behavioral life-cycle theory submits that people mentally allocate wealth over three classifications: (1) current income, (2) current assets, and (3) future income. The propensity to consume is greatest from the current income account, while sums designated as future income are treated more conservatively.
  2. Another interpretation of mental accounting describes how distinct financial decisions may be evaluated jointly (as though they pertain to the same mental account) or separately.
- Investment implications:
  - Run different investment portfolios for different types of expenditure (Christmas presents, child's education, vacation and so on)
  - Treat dividends and capital gains differently (e.g. willing to spend dividends but not willing to sell shares to generate homemade dividends)

Relating to information processing: Anchoring & adjustment

- A psychological heuristic that influences the way people perceive probabilities.
- When faced with a situation of having to place a value on some asset, people typically home in on a particular number and subsequently anchor on that number (i.e. loathe to depart from it) irrespective of subsequent information.
- Investors exhibiting this bias are often influenced by purchase prices - or arbitrary price levels or price indexes - and tend to cling to these numbers when making future investment decisions.
- Investment implications:
  - When forecasting the future return on a stock or market, investors will depart very little from its recent performance
  - People tend to avoid selling stocks on which they are making a loss
  - Analysts will **not** adjust current forecasts for the earnings of a stock despite receiving some very good or very bad news relating to the stock

Relating to information processing: Framing bias

- Relates to the tendency of decision makers to respond to various situations differently, based on the context in which a choice is presented.
- A decision frame is the decision maker's subjective conception of the acts, outcomes, and contingencies associated with a particular choice. The frame that a decision maker adopts is controlled partly by the formulation of the problem and partly by the personal characteristics of the decision maker.
- Investment implications:
  - The optimistic or pessimistic wording around a stock's earnings release impacts the market reaction
  - Individuals tend to be risk averse when dealing with gains (gambling) but risk takers when dealing with loses (insurance)
  - Individual behaviour is somewhat conditioned by their recent investment experience

Your Answers, Please

Provide a 90% confidence range for the following 10 questions (ie nine out of 10 of your answers should fall within your range)

What is the average weight in kilograms of an adult blue whale?

In what year was the Mona Lisa painted by Leonardo da Vinci?

How many independent countries are members of the United Nations?

What is the air distance between Sydney and Paris (in kilometres)?

How many bones in the human body?

How many combatants killed in World War 1?

How many items (books, manuscripts, microforms, sheet music, etc.) does the US Library of Congress add to its collection each day?

How long is the Amazon River (in kilometres)?

How fast does the earth spin at the equator (in kilometres per hour)?

How many earthquakes per year does the National Earthquake Information locate and publish information about, globally?

Your Answers, Please

Provide a 90% confidence range for the following 10 questions (ie nine out of 10 of your answers should fall within your range)

What is the average weight in kilograms of an adult blue whale? (114,000)

In what year was the Mona Lisa painted by Leonardo da Vinci? (1505)

How many independent countries are members of the United Nations? (192)

What is the air distance between Sydney and Paris (in kilometres)? (16,820)

How many bones in the human body? (206)

How many combatants killed in World War 1? (8.3M)

How many items (books, manuscripts, microforms, sheet music, etc.) does the US Library of Congress add to its collection each day? (12,000)

How long is the Amazon River (in kilometres)? (6,400)

How fast does the earth spin at the equator (in kilometres per hour)? (1,670)

How many earthquakes per year does the National Earthquake Information locate and publish information about, globally? (30,000)

Relating to emotions: Overconfidence

- Can be summarised as unwarranted faith in one's intuitive reasoning, judgments, and cognitive abilities. i.e. People think that they are smarter and have better information than they actually do have.
- Two types of overconfidence:
  - **Predictive** overconfidence - confidence intervals that investors assign to their investment predictions are too narrow
  - **Certainty** overconfidence - investors are often too certain of their judgments
- Implications for investing:
  - Overconfidence can lead to excessive trading because the individual thinks that they know better than others
  - Overconfidence can lead to the under-estimation of downside risk
  - Overconfidence can also lead to under-diversification as the individuals have too much faith in the stocks that they favour

Relating to emotions: Status quo bias

- An emotional bias that predisposes people facing an array of choice options to elect whatever option ratifies or extends the existing choice rather than alternative options that might bring about change. In other words, the status quo bias is similar to inertia and operates in people who prefer that things stay relatively the same.
- An option is more desirable if it is designated as the "status quo" than when it is not. Status quo bias can contribute to the inertia principle, but inertia is not as strong as status quo bias. Inertia means that an individual is relatively more reluctant to move away from some state identified as the status quo rather than move to any alternative state not identified as the status quo.
- Implications for investing:
  - Causes investors to hold onto stocks to which they feel familiar
  - Causes investors to leave things unchanged, especially if alternative is to realise a loss

Relating to emotions: Regret aversion

- Avoid taking decisive actions fearing that, in hindsight, whatever course they select will prove less than optimal. Basically, this bias seeks to avoid the emotional pain of regret associated with poor decision making.
- People who are regret averse try to avoid distress arising from two types of mistakes:
  1. errors of commission that occur as a result of taking misguided actions and
  2. errors of omission which occur as a result of misguided inaction (e.g. opportunities overlooked or foregone)
- Implications for investing:
  - Investors are too conservative in their investment choices
  - A reticence to sell assets which are presently trading at a price below their purchase price which results in holding on to positions too long
  - Herding behaviour as people think they will suffer less regret from losses incurred by doing whatever everyone else has been doing
  - Investing in "glamour" stocks for same reason that losses result in less regret

Do these behavioural biases really matter?

- The answer is NO if they only randomly applied to a small proportion of the population.
- The likelihood is that they apply to most of us and, even more importantly, they bias our behaviour in a particular direction.
- Indeed, they might provide the major explanation for the prominence of phenomena such as momentum investing (representativeness and regret).

Do these behavioural biases really matter?

- Some say NO as the important thing is whether the markets act as if they are rational. Is this the case?

Implications of MPT:

- Changes in prices reflect news
- Everyone buys the market portfolio
- Virtually no trading activity
- Prices are unpredictable
- Only non-diversifiable risk is priced

Observations:

- October, 1987
- Most individuals are poorly diversified
- Funds are actively traded with relatively high turnover
- low p/e, prior losers, small cap outperform, price drift after earnings and dividend announcements and share repurchase
- Beta barely matters

Do these biases really matter?

- No, because:
  1. arbitrageurs will compete away any resulting mispricing opportunities; and,
  2. quasi-rational noise trades will go out of business.
- Why would this not occur?
  - The conditions under which this will occur are quite exhaustive - in particular, they include that the true value will become known within the arbitrageur's time horizon, there are not too many noise traders, etc.
  - Many noise traders may outperform the rational investor over extended time periods.

Two quotes

- "The economist may attempt to ignore psychology, but it is sheer impossibility for him to ignore human nature . . . If the economist borrows his concept of man from the psychologist, his constructive work may have some chance of remaining purely economic in character. But if he does not, he will not thereby avoid psychology. Rather, he will force himself to make his own, and it will be bad psychology." (Clarke, 1918)

- "People behave non-rationally in orderly, systematic ways. Predictable ways which, once detected, can let rational investors who have eliminated their own 'sub-optimal biases' maximise their gains and grow rich in markets full of non-rational investors." (Harvard conference, 1994)

A quick question

- Choose an integer between 0 and 100.
- The winner is the person whose number is closest to two-thirds of the average of the numbers submitted.
- What is your number? _____

Analysis of the number game

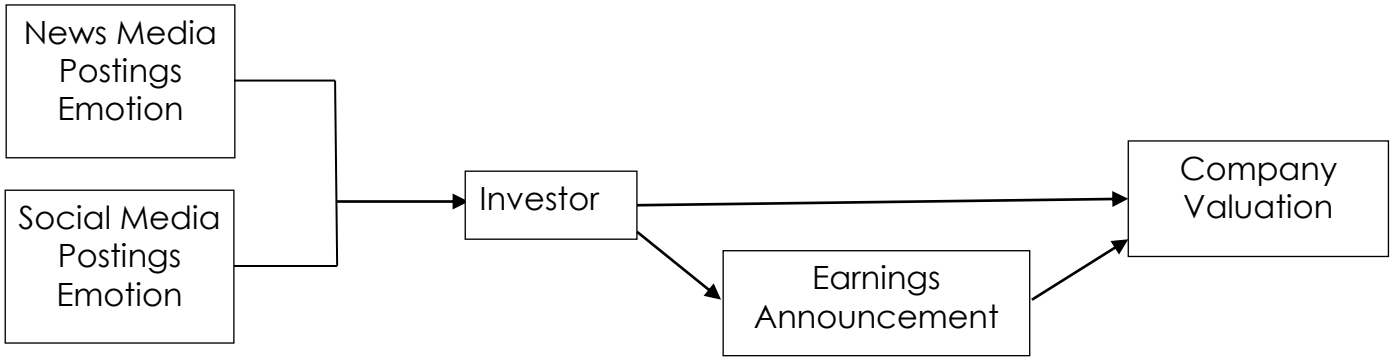
- The thought process
  - Level 0: "I have no idea what to do, it's random. I'll guess 50."
  - Level 1: "Most of these players still seem asleep. They will guess 50. I'll guess 33."
  - Level 2: Most of these players think they are pretty smart, but they think everyone else is asleep, so they will probably guess 33. I'll guess 22."
  - Level 3: "Most of these players will figure out how the game works. They will think most people will guess 33, and will guess 22. I should guess about 15."
  - Level n: The process goes on until you get to either 1 or 0.
- Investment implications:
  - There are opportunities to be identified and exploited
  - There are no prizes for being too far ahead of the pack… "be one level smarter"

Implications of behavioural biases for investing

- The suggestion is that investors who act in an irrational/normal way will make some poor investment decisions and also distort prices.
- There are some types of personal behavioural traits that are best avoided
  - e.g. regret aversion that results in holding on to securities too long and so realising unnecessary losses.
- There are other types of behaviour that are market wide and so it is less obvious that they should be avoided but rather exploited.
  - e.g. If market sentiment about a stock is very low causing the stock's price to be excessively penalised, the strategy would be to buy into that stock but only when you believe that there is going to be a significant improvement in the sentiment relating to the stock.

Case study: Media impact on investment decision-making

1. Emotions as expressed in the news and social media will be absorbed by investors and so impact on their investment decision.
2. There will be two channels through which this impacts company valuations:
   - A direct channel via which the level of investor emotions impacts the market value of a company given existing information relating to the company
   - A less direct channel where the level of investor emotions impacts on how the investor reacts to new information relating to the company and so again influences the market value of the company



Different emotions

- In this study we consider two measures of emotions:
  - aggregate Positive (+ive) Emotions: Optimism, Joy, Trust, Love/Hate
  - aggregate Negative (-ive) Emotions: Stress, Gloom, Fear, Anger, Conflict and Violence
- Expectations:
  - (Aggregate) Positive emotions will have a direct positive impact on a company's valuation and will increase the investor response to good news but decrease the response to bad news.
  - (Aggregate) Negative emotions will have a direct negative impact on a company's valuation and will decrease the investor response to good news but increase the response to bad news.

Evidence: Aggregate emotion (S&P500 1998 to 2017)

			Social + News
Agg. Positive Emotions	BAD NEWS	HIGH +ive	0.00645**
		LOW +ive	0.02218***
		Difference	-0.01573***
	GOOD NEWS	HIGH +ive	0.06037***
		LOW +ive	0.01628***
		Difference	0.04409***
	DIRECT	LEVEL	0.12080***
		CHANGE	0.16396***
Agg. Negative Emotions			Social + News
	BAD NEWS	HIGH -ive	0.02878***
		LOW -ive	0.01015***
		Difference	0.01863***
	GOOD NEWS	HIGH -ive.	0.02472***
		LOW -ive	0.03718***
		Difference	-0.01246**
	DIRECT	LEVEL	-0.08491***
		CHANGE	-0.14046***

- The results report the extent of aggregate positive emotions on the value of a firm.
- Indicate the following:
  - Both positive and negative emotions have a direct impact of sentiment on company valuation
  - High positive emotions reduces the impact of bad news on a company's value but increase the impact of good news
  - High negative emotion has exactly the opposite impact

… and the PEAD . . .

Agg. Positive: 60 days (Bad News)		
CAR {2, 60}	**Lo**	**Hi**
Decreasing	**0.02161*** **	**0.01544*** **
Increasing	0.00297	-0.0032
Agg. Positive: 60 days (Good News)		
CAR {2, 60}	**Lo**	**Hi**
Decreasing	0.00523	-0.00798
Increasing	**0.02058***	**0.00737*** **
Level	0.01037	
Change	**0.03415*** **	
Agg. Negative: 60 days (Bad News)		
CAR {2, 60}	**Lo**	**Hi**
Decreasing	0.00573	0.00088
Increasing	**0.01162*** **	**0.00677*** **
Agg. Negative: 60 days (Good News)		
CAR {2, 60}	**Lo**	**Hi**
Decreasing	0.00276	**0.01433** **
Increasing	-0.00487	**0.00670*** **
Level	-0.01483	
Change	-0.00571	

- The most striking finding is that the performance during the post-announcement period (in this example, the 60 trading days after the announcement) is impacted by the change in the emotion during the period, more so than by the level of emotions at the time of the announcement
- One exception being the influence of negative emotions in the case of good news where it is the level at the time of the announcement which has the greater influence

Does this open up any investment opportunities?

- On the face of it, one might think that the market would subsequently adjust to any initial underreaction to an information signal.
- The existence of a PEAD (see efficient markets slides), plus the fact that emotions would seem to influence the initial reaction, would suggest the possible existence of a profitable strategy.
- Suggested (base)strategy:
  - Buy stocks that announce good earnings news at a time that positive emotions are low / negative emotions are high, and short sell stocks that announce bad earnings news at a time when positive emotions are high / negative emotions are low.
  - In both cases, reverse the transactions after 60 trading days.

Performance of base strategy

		Index	Benchmark	Lo/Hi **+ive** Emotions
		% pa	% pa	% pa
PUE	All	10.54	12.62	11.90
	High	11.05	18.61	**18.84**
	Low	10.03	6.87	4.95
NUE	All	11.14	5.19	6.88
	High	11.06	5.71	5.19
	Low	11.21	4.68	9.49
		Index	Benchmark	Hi/Lo **-ive** Emotions
		% pa	% pa	% pa
PUE	All	10.54	12.62	13.68
	High	11.05	18.61	20.16
	Low	10.03	6.87	7.40
NUE	All	11.14	5.19	2.07
	High	11.06	5.71	**-0.51**
	Low	11.21	4.68	4.49

- Strategy of buying stocks with high PUE announced at a time when positive emotions are low realises a return of 18.84% pa.
- Strategy of short selling stocks with high NUE announced at a time when negative emotions are low realises a return 0.51% pa.
- Hence, the return of a long/short portfolio will be 19.35% pa.

Enhanced strategy

- Problem is many stocks don't exhibit any meaningful movement back to fair value and so drag on performance. Those must likely to move upwards in price are PUE stocks that experience a large increase in positive emotions over the post-announcement period, and those most likely to move downwards in price are NUE stocks that experience a large increase in negative emotions over the post-announcement period.
- At the time of announcement, we don't know how emotions will perform over the post-announcement period. Is there a way to enhance the strategy?
  - Purchase stocks that announce a high PUE when positive emotions are low and sell after emotion increase by a (pre-specified) large amount or end of 60 days. Realised **minimum 23.91% pa** (extra 5% pa)
  - Short sell stocks that announce a high NUE when negative emotions are low and buy back after negative emotions increase by a (pre-specified) large amount or end of 60 days. Realised **minimum -3.96% pa** (extra 3.5% pa)
  - **The long/short strategy returned almost 28% pa** (extra 8.5% pa, a 50% improvement!)

What can we learn from this case study?

There are probably three main points to make stemming from this case study:

1. Human emotions (and behavioural traits more generally) do create exploitable investment opportunities.
2. It provides (interesting?) insights into how one goes about developing an investment process
   - It stresses the importance of keeping one's eyes open
3. It is nowhere near as difficult as many would make out to add value by active management.
   - Just necessary to address the opportunities in a rational way and to be very disciplined

Implications of behavioural biases for investment advisers

- For themselves:
  - They are just as subject to these behavioural traits as anyone and it will influence the advice that they give clients.
  - It is important they be aware of their traits and try to control for them in order to be able to provide the best possible advice to clients.
- For clients:
  - It is also important for their adviser to identify the behavioural traits of clients and deal with them.
  - The important thing is what does it mean "to deal with them"?

“to deal with them”

- One extreme option is to type-cast the client in order to be able to determine what they would be comfortable to hear and then tell them exactly that.
- At the other extreme, one still has to type cast the client and determine what they want to hear – the difference being that the adviser also has to determine the strategy that is in the client’s best interests and then use their knowledge of the client to devise a strategy to steer them as far as possible towards the strategy that is in their best interests.
- The message is the investment strategy that makes the client most comfortable is frequently not the one that is in their best interests. Business imperatives might drive the adviser towards the “comfortable” option and steer away from providing the “best interests” advice.
- Going down the “best interests” path is perilous but made easier for advisers who can accurately type caste clients.

Type-casting a client

- The text identifies four different types of individuals:
  - **Preserver**: A passive investors who places a great deal of emphasis on financial security and preserving wealth (i.e. they are highly risk averse)
  - **Follower**: Investors who readily follow the advice of others including their investment adviser
  - **Independent**: An active investor with medium to high risk tolerance who is strong willed and an independent thinker
  - **Accumulator**: An aggressive investor with a high level of self-belief who likes to get actively involved in their investment decisions
- The text would suggest that all of these groups are irrationally driven by emotion. It is suggested that an adviser's goal should be to create a behaviourally modified asset allocation to which the client can **comfortably** adhere and that will **meet their long-tern financial goals.** It does not recognise the conflict between "comfort" and "meeting goals".

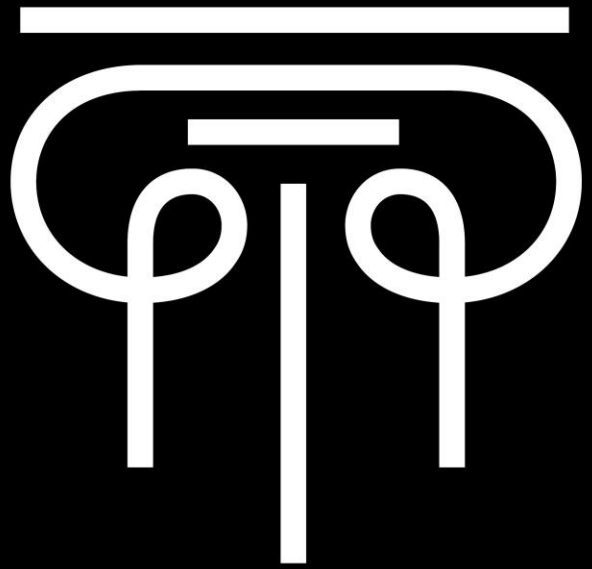
Kahneman & Riepe (1998): Aspects of Investor Psychology

This is one of the few articles to address the implications of behavioural finance for investment advisers. The authors offer the following check list (which very much has comfort in mind):

1. Encourage clients to adopt a broad view of their wealth, prospects and objectives.
2. Encourage clients to make long-term commitments to policies.
3. Encourage clients not to monitor results too frequently.
4. Discuss the possibility of future regret with your clients.
5. Ask yourself if a course of action is 'out of character' for your client.
6. Verify that the client has a realistic view of the odds, when a normally cautious investor is attracted to a risky venture.
7. Encourage the client to adopt different attitudes to risk for small and for large decisions.
8. Attempt to structure the client's portfolio to the 'shape' that the client likes best (such as insuring a decent return with a small chance of large gain).
9. Make clients aware of the uncertainty involved in investment decisions.
10. Identify the aversion of your clients to the different aspects of risk, and incorporate their risk aversions when structuring an investment program.

Take outs

- Human behaviour has a significant impact on:
  - Pricing of securities and asset classes;
  - The advice given by investments advisers; and,
  - The reaction of the clients to the advice they receive.
- It is important that all parties take this into account to ensure the avoidance of bad investment decisions, the recognition of investments processes that exploit the opportunities attributable to the bad investment decisions of others and in the process of providing good advice that elicits good investment outcomes for clients.



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