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The death of the rational investor?

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Outline

- ❑ *Rational man v. Behavioural man*
- ❑ Regret, Prospect theory and Risk-taking
- ❑ Information processing biases
- ❑ Good Reasons to be Irrational
- ❑ Behavioural rules for understanding the stock market

The modern theory of finance, developed by Markowitz, Sharpe, Lintner and others in the 1950s, has been hugely influential. Academics, professional fund managers and retail investors have come to speak a common language of risk and return, diversification, index tracking and benchmarking. But key assumptions of the modern theory of finance - consistent preferences and rational information processing - are clearly unrealistic, and many predictions of the modern theory are consistently violated.

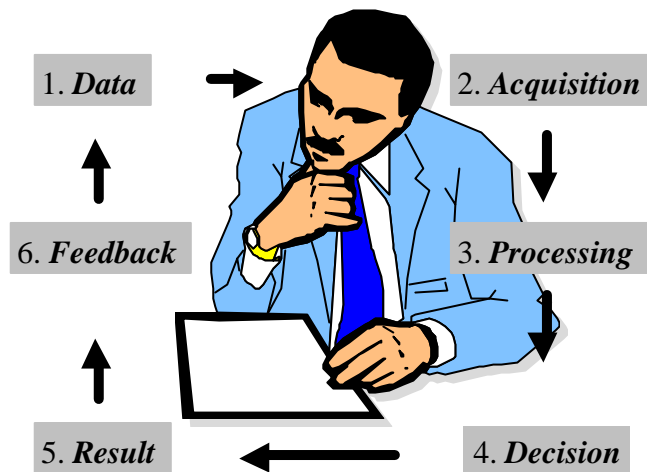
Behavioural finance has emerged in the past decade as a rival to the modern theory of finance. It starts from the observations of psychologists - notably Kahnemann, Slovic and Tversky - on how people in actually feel about risk, how they muddle through when faced with complicated statistical problems, and how they react to news and to feedback about their own performance.

Our aim is to describe these alternative theories of risk-taking behaviour, and identify the most important biases in information processing which affect the ability of people to make “rational” decisions. We conclude by asking two key questions

- is “behaviour” really “irrational”, given the incentives people face,
- does this theory make useful predictions about how markets work



Information processing

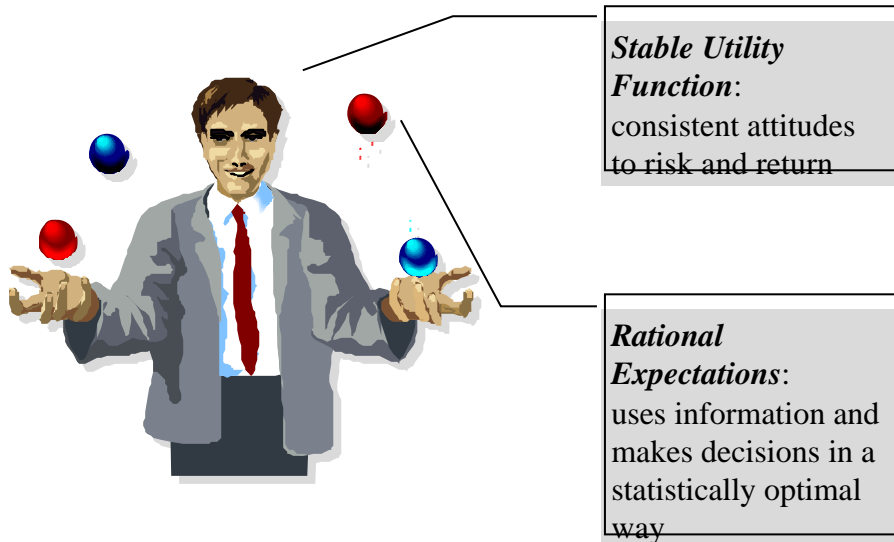


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Rational economic man ...



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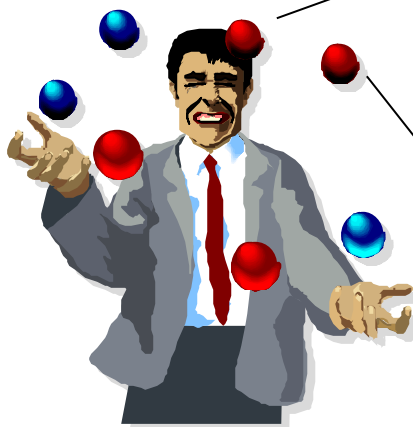
Failures of the rational model



- ❑ Assumptions obviously wrong, but
 - does it matter?
- ❑ Predictions wrong too:
 - people expect high returns from shares (“equity premium puzzle”)
 - people sell winners too early, losers too late
 - share prices overreact to some information (“contrarian” strategies)
 - share prices underreact to other information (“momentum” strategies)



and really ... it's all too much



Unstable Preferences:
inconsistent attitudes to risk and return

Bounded Rationality:
biases in processing information
heuristics (rules of thumb) used to make decisions



For example ...



... you're all above average



Overconfidence

- ❑ Academic studies show that about 80% of you think you are above average with respect to
 - ◆ being witty
 - ◆ driving a car
 - ◆ getting along with other people
 - ◆ doing your job
 - ◆ living for a long time

- ❑ Overconfidence is highest in contexts where there is
 - ◆ a lot of (not necessarily helpful) information
 - ◆ little feedback



- ❑ ***Rational man v. Behavioural man***
- ❑ ***Regret, Prospect theory and Risk-taking***
- ❑ Information processing biases
- ❑ Good Reasons to be Irrational
- ❑ Behavioural rules for understanding the stock market

The modern theory of finance assumes that investors have stable and well-behaved preferences. So for a particular individual, the happiness or “utility” derived from a certain level of wealth - say £1 million - is a fixed number.

Utility should not depend on the utility of other investors, nor on how the wealth was achieved. But in reality, both these propositions are doubtful. For example we all experience:

- ***Regret***: our £1 million might have been the result of some low rate of interest received over the past year on some safe investment, like a bank account. Logic says that our investment strategy now should be independent of anything - like last year’s stock market performance - that does not help predict next years returns or risks. But if the stock market performed very well last year we might well regret our low return on the bank account, and take more risk this year. On the other hand, if the stock market did badly last year we might invest again in the safe asset.

- ***Path Dependence***: our £1 million this year might be the result of (a) a rise from £500 thousand last year, or (b) a fall from £2 million last year. Logic - in the form of Bellman’s principle, the fundamental theorem of dynamic programming - says that the best thing to do from now on is independent of how we got here. But in reality we might take more risk in scenario (b) than in scenario (a)



Preferences and investment decisions

- ❑ Suppose investors can put £100K in either
 - a 1-year bond which definitely pays 5%
 - a stock index fund, which might pay +20% or -20%
- ❑ Risk-averse investor A will buy the bond
- ❑ Risk-loving investor B might buy the index fund
- ❑ *How will they feel at the end of the year?*



Investor A

- ❑ Rational model:
 - get happiness = utility of £105K = $U(105)$, a fixed number
 - no incentive to change behaviour next year
- ❑ Behavioural model:
 - happiness depends on what happens in the stock market
 - ◆ if stock market fell, $U(105)$ is very high (*Schadenfreude*)
 - ◆ if stock market rose, $U(105)$ is not so high (*Regret*)
 - investor experiencing regret may take more risk next year



Investor B

- Rational model:
 - get happiness = $U(80)$ or $U(120)$
 - fall in utility from -20% is bigger than rise from +20%
- Behavioural model(s):
 - ***Prospect Theory***:
 - ◆ if market falls, investor takes more risk to recoup losses
 - ◆ if market rises, investor takes less risk to preserve gains
 - or*
 - ***House Money theory***:
 - ◆ if market rises, investor takes more risk since is now playing with the “house money”



Prospect Theory explains anomalies

- Evidence favours Prospect Theory over House Money theory
 - e.g. Chicago Day Traders take more risks p.m. if they lost a.m.,
 - Hedge Funds lock in above-average first-half-year returns, ...
- Prospect theory explains a lot of retail/ internet (and even professional) investor behaviour:
 - expectations of high share returns (large equity premium)
(possibly due to extreme loss aversion)
 - tendency to hang on to losers
(due to increased risk-taking after losses)
 - tendency to sell winners too soon
(due to decreased risk-taking after gains)



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Psychologists have long recognised and catalogued the ways in which people fail to acquire and process data sensibly. We are all subject to:

- **Acquisition biases:** just recognising and filtering relevant data is hard

Availability: we give excessive weight to available information

How to lie with Statistics: we are easily misled by the way data are presented

- **Processing biases:** we are very poor intuitive statisticians.

Anchoring: we give too much weight to initial estimates

Conservatism: we are reluctant to change our minds

Overconfidence: we exaggerate (hugely) our own forecasting abilities

Representativeness: we confuse joint and conditional probabilities

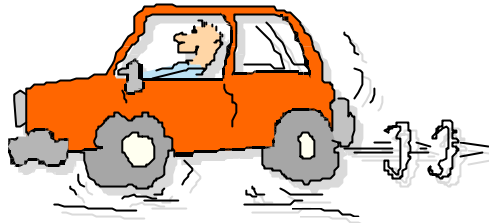
Pattern Seeking: we tend to see patterns even in genuinely random data

Feedback biases: we hate to be wrong ... and so fail to learn from mistakes



Acquisition bias: availability

- ❑ Availability/ anchoring heuristic:



- ❑ Too much weight given to readily available information
... so stock prices too sensitive to recent headline news

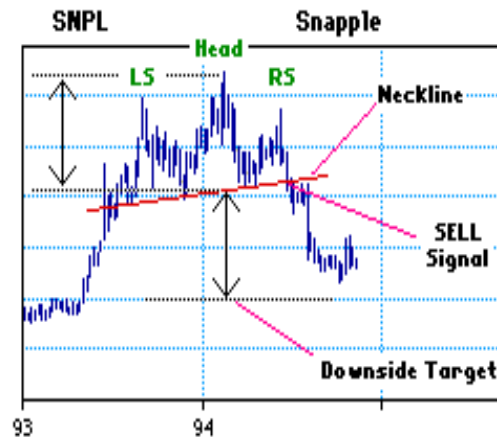


Processing bias: representativeness

- | | |
|---|--|
| ❑ Tim Henman is our most successful tennis player. But he usually gives us a few scares in the early rounds of major tournaments. | ❑ Rollo Limited is actively tracked by many investment analysts. It came near the top of the ANZ-AFA analysts poll for “most admired companies” in the last three years. |
| ❑ In the first round of Wimbledon, which is more likely: | ❑ Which is more likely: |
| A. Henman will lose the first set | A. Rollo is a large company |
| B. Henman will lose the first set but win the match | B. Rollo is a large company with a strong share price performance |



Processing bias: pattern-seeking



- The Head-and-Shoulders formation, a popular “chart pattern”



Feedback bias: US earnings forecasts





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On the other hand, some “behaviour” is not at all irrational, but a rational response to the incentives that individuals face.

For example, economic forecasters would lose credibility if they changed forecasts too often. The need to sell their forecasts makes them seem “conservative”. Investment analysts need to keep an information flow from the companies they track. This makes them “optimistic”.

All of us need to persuade colleagues and clients that we are above average in our line of business. So middle class, middle aged (male) professionals and professors have to appear “overconfident”.

At a deeper level, our information processing skills have developed over the generations to equip us for social interaction. Making the most of available information, being confident and aggressive, all have high social value.

Sadly, a training in advanced statistics often tends to be associated with lower social skills.



Market incentives for irrationality

- ❑ *Some biases are rational* reactions to market incentives
- ❑ “Rational Biases” in earnings forecasts:
 - **conservatism**: earnings and economic forecasts are typically revised too slowly. Forecasters need to maintain credibility
 - **herding**: range of forecasts too narrow. Aids credibility.
 - **variety seeking**: Forecasters need to cultivate a reputation for relative optimism/ pessimism
 - **persistent optimism**: Analysts need to maintain goodwill of companies supplying information



Swedish housewives are rational

- ❑ Batchelor and Jonung, 1985 studied financial forecasts in Sweden
 - *middle class, middle aged, male professionals* far too confident:
 - but *Swedish housewives* had rational expectations





Social incentives for irrationality

- ❑ Rational economic man
 - an individual with good logical skills
 - has low social value (a “nerd”, a “cold fish”)

- ❑ Some “biases” have positive social/ survival value:
 - **availability:**
 - ◆ once bitten, twice shy
(don’t need a large sample of bites to confirm they hurt)
 - **overconfidence:**
 - ◆ needed to protect ego, attract mates,
 - ◆ maintain professional credibility





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Some useful generalisations are emerging from the behavioural finance research programme.

1. ***Hard v. Soft data.*** The reaction of market prices to news depends on whether the news is hard (earnings data, say) or soft (rumour, PR, ..)
 - soft news causes temporary price changes up or down, and leads to “mean reversion” in prices
 - hard news causes permanent price rises and falls
 - hard bad news tends to be absorbed slowly, so initial price fall is too small, and there is downward “momentum” in the price

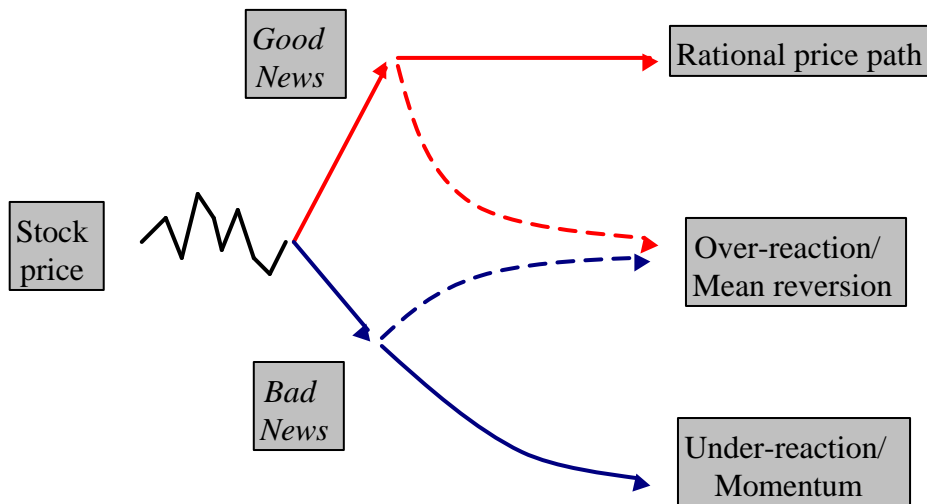
2. ***Strong v. Weak feedback.*** Behavioural biases tend to occur most in markets where feedback on performance is weak or infrequent. Weather forecasters are less biased than economic forecasters, since errors are obvious, and heavily penalised.

Investment Property has the characteristics of a behaviourally challenged market. It is driven by:

- valuations based on rules of thumb, market sentiment (soft news) , and subjective individual judgements
- weak feedback, with infrequent genuine market transactions, and low penalties for consistently inaccurate valuations



News and stock price dynamics

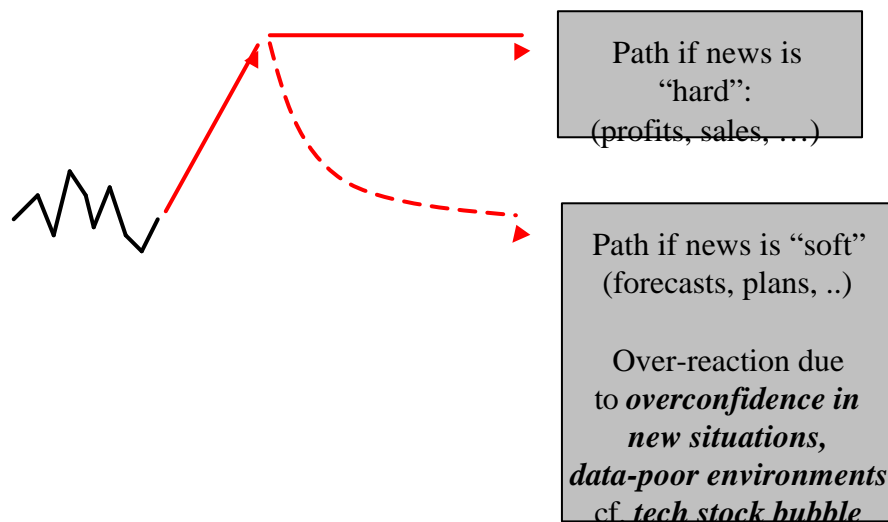


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Good news: hard v. soft



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Bad news: hard v. soft



Path if news is “soft”
(forecasts, plans, ..)

*too much weight given to
available non-quantitative
information*

Path if bad news is “hard”
(profits warnings,
downsizing):

initial underreaction due to
reluctance to realise losses

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Stock market behaviour - the acid test

Behavioural Factors

Image effect

Companies with a strong image can become temporarily in favour or even glamorous, becoming relatively expensive. On the other hand, stocks that are temporarily out of favour are oversold and become relatively cheap.

Underreaction

Investors tend to underweight fundamental information in their decision-making process. When the underlying information is very positive, this delay will cause a stock price to trend upwards, creating a positive price momentum.

Overreaction

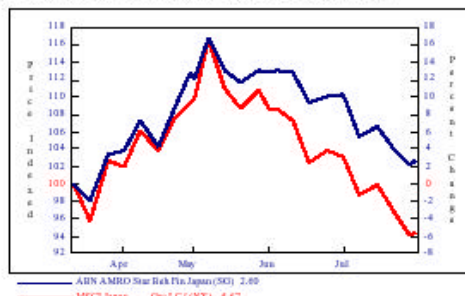
Investors put too much weight on recent information, causing them to overreact. Recent news, rumours or quarterly earnings reports for example can result in sharp movements in the stock price.

Overconfidence

Investors have a lot of confidence in their own predictions. When investors have made up their mind, they tend to stick to it. Analysis, for example, do not change their rating very often, even when there is new information pointing in another direction.



8 March 2001 to 31 July 2001, Bid-Bid, in S\$



Source : S&P's Fund Services

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Investment Property - behaviourally challenged?

- ❑ Behavioural biases persist in markets where
 - there is a high ratio of soft to hard news
 - there is weak or infrequent feedback to agents
- ❑ On both counts, investment property scores high relative to the stock market, say, since
 - valuations are driven by a combination of heuristics (“rules of thumb”) and sentiment about the area/ property type
 - genuine market transactions are infrequent

Behavioural Finance: references

A very readable survey available on the web ...

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